NOV 19 1923

THE QUARTERLY JOURNAL OF ECONOMICS

VOL. XXXVIII *NOVEMBER, 1923* No. 1

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CAMBRIDGE, MASS., U.S.A.
HARVARD UNIVERSITY PRESS

LONDON: HUMPHREY MILFORD
OXFORD UNIVERSITY PRESS

1923

The Quarterly Journal of Economics

Published by Harvard University

Books, periodicals, and manuscript to be addressed, EDITORS of QUARTERLY JOURNAL OF ECONOMICS, Cambridge, Mass.

Business letters to be addressed, HARVARD UNIVERSITY PRESS, Randall Hall, Cambridge, Mass. Subscription, $5.00 a year.

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THE
QUARTERLY JOURNAL
OF
ECONOMICS

NOVEMBER, 1923

THE UNITED STATES STEEL CORPORATION AND PRICE STABILIZATION

SUMMARY

Price policy of the Steel Corporation has been conservative, 2. — The Corporation has no monopoly, 5. — Prices of "finished steel" before and after the organization of the Steel Corporation and before and after the outbreak of the World War, 10. — Extreme fluctuations in the prices of "finished steel" much less during the years 1902 to 1914 than during the periods preceding the formation of the Corporation and after 1915, 14. — Prices of steel billets after the middle eighties show a similar lessening in fluctuations during the years 1902 to 1914, 17. — Prices of steel rails show a pronounced stabilizing influence after the formation of the Steel Corporation, 21. — Influence of pools and associations, and contrast in price movements between billets and rails, 22. — Results of price comparisons show that prior to the World War fluctuations were greatly reduced after the organization of the Steel Corporation, but with the exception of rail quotations, were again increased under the strain of war conditions, 23. — Question of monopoly and price stabilization, 29.

OVER two decades have elapsed since the formation of the United States Steel Corporation. During this period the salient features of its industrial and financial policies with respect to the public, its shareholders, competitors, and employees have become apparent. It is now possible to state with some degree of assurance what those policies are, and to make some estimate of the success they have attained. Of these policies none

have greater public interest than the aims and achievements of the Corporation in influencing the prices of the wares it sells.

This influence may be discussed, first, with reference to professed aims or purposes; second, with reference to the possible power over prices as shown by the proportionate control exercised over the country's output; third, with reference to the general trend of prices since the organization of the Corporation as compared with prices prior to its formation; and, fourth, with reference to the deductions to be drawn from the data available. Regarding all these phases some reserve must be maintained in drawing conclusions. The professed purpose of the Corporation respecting prices may be voiced by such an official as Judge Gary, and comparison may be made with the actual practices of the organization. But as will appear in the following pages, various factors make necessary considerable caution in any attempted statement of price policy and influence.

Shortly after the Steel Corporation was organized, its price policy was characterized as conservative. While some prices were raised [1] there was no general and pronounced upward movement in steel quotations such as had characterized the formation of the steel consolidations of the late nineties. Monopolistic intentions were disavowed, and the two years immediately following the organization of the big corporation, which were highly prosperous, were signallized by price levels considerably below those of the years 1899 and 1900. On the other hand, the prices which prevailed during the depression of the fall months of 1903 and of the year 1904 were marked by no such reductions as had characterized the

1. The price of steel rails, for example, which had been quoted at $35 per gross ton in July, 1900, declined to $26 before the close of the year. In the spring of 1901, when the Steel Corporation was formed, the price was raised to $28, where it remained for a number of years.

years 1897 and 1898. In 1912 the Iron Age expressed a commonly held opinion in the steel business when it said, "It is no indictment of the consolidations [2] to say that, since they came into the iron trade, prices have not gone back to the level of 1897 and 1898, tho in fact they came perilously near it last November. The prices of 1897 and 1898 were calamitous, and consumers of iron and steel want no return of them. On the other hand, the trade has not wanted and has not had any return of the high peaks of the curves for 1899 that give that year its marked isolation on the price chart." [3]

The practice of the Steel Corporation after its formation, and the declarations of such trade authorities as the Iron Age, indicate a purpose on the part of its officials to stabilize prices. Combinations usually show their price policies after their formation, if business conditions are favorable; and such conditions existed when the Steel Corporation was organized. At the time of the formation of this consolidation the London Engineer voiced a sentiment very widespread on both sides of the Atlantic when it said: "Mr. Morgan and his immediate partners can fix the price of iron and steel. They are, for the moment at all events, beyond the sphere of competition. They can have no competitors in their own country. The American consumer is absolutely in the hands of the trust. They can have no European competition because the tariff defends them." This dark view of monopoly control was, as will be shown, unfounded. The conditions, however, in the latter part of 1901 and during 1902 were favorable for a radical upward movement of prices, and if the policy of the Corporation was

2. The consolidations like the Federal Steel Co., American Tin Plate Co., American Steel and Wire Co., etc., formed during the years 1898–1900, and the United States Steel Corporation, organized in 1901.

3. Iron Age, May 16, 1912, p. 1225. This statement of course refers to conditions prevailing before the world war.

to exact for the time being the highest prices consistent with the largest total net return, the opportunity was not lacking. Prices during that period advanced, but the rise was moderate compared with similar periods of the recent past.

In an address made some months ago to the stockholders of the United States Steel Corporation, Judge Gary stated that if the Corporation could do what it would like to do it would always demand and receive fair prices for what it produces, and never let prices go so high as to be extortionate. He said that the Corporation never tried to get into a position where it could ask more or pay less than was considered fair.[4] Standing by itself, such a declaration in behalf of a policy of fair prices would mean little or nothing. Taken in connection with what happened in the years immediately following the organization of the Steel Corporation, and what has apparently been the practice of the steel trade since that time, and particularly of the Corporation itself, the sentiment expressed indicates a well-defined conservative policy with respect to price changes.

Such a policy in the manufacture of iron and steel is consistent with farsighted business. Alternating periods of prosperity and depression act with great force upon this industry, and make some stabilization of trade peculiarly desirable from the standpoint of producers. The demand for iron and steel varies, not according to the pressing needs of the consuming public, but according to changes in the development of new enterprises. These changes are associated with variations in the spirit of investment. In so-called good or brisk times new enterprises of all sorts are freely launched. In succeeding periods of dullness few ventures are entered upon. Investment and fresh ventures imply the erec-

4. New York Times, April 17, 1923, p. 5.

tion of plants, demand for structural material, rails and cars, and increased use of tools and machines. These in turn mean iron and steel.

The stabilization of iron and steel prices, by rendering less hasty the purchases of material on a rising market and reducing the tendency to postpone purchases on a falling market, helps to limit the fluctuation of trade. The desire to lessen these fluctuations has been a leading incentive to the formation of consolidations in general, and has been especially urgent in the iron and steel industry. The necessity of opening up and shutting down mills and furnaces with varying periods of demand, causes much waste. The mechanical waste involved is sufficient to increase very materially the cost of production. For the development of a large and well-established iron and steel business, price stabilization would therefore be a natural and farsighted policy.

The carrying-out of such a policy, however, on the part of any business organization depends upon the control or influence which it has, or can exercise, over production. Price regulation, if at all permanent and influential, implies ability to limit or increase output to an extent sufficient to have an appreciable effect upon the available market supply. Such ability generally means some monopoly power, but such power is disclaimed by the United States Steel Corporation. Nevertheless a great combination is organized primarily to regulate or restrict competition and, therefore, production. The object of such a consolidation is not so much a better adaptation to market conditions as control of those conditions.

Notwithstanding the commanding position of the Steel Corporation among industrial combinations, it has by no means secured control of the country's output of iron and steel. During the first six years of its exist-

ence it produced less than forty-five per cent of the country's iron ore and pig iron, controlled less than sixty-five per cent of its steel ingots, and manufactured only about half of its rolled and finished material.[5] These proportions have altered slightly during the two decades of the Corporation's history, but not materially. The proportion of the country's output of iron and steel controlled by this consolidation, and the general trend of that control, may be indicated by tabulating the percentages of total product for three pre-war years and three post-war years, as follows.[6]

PERCENTAGES OF COUNTRY'S OUTPUT OF IRON AND STEEL PRODUCED BY U.S. STEEL CORPORATION

	Pre-war Years			Post-war Years		
	1911	1912	1913	1919	1920	1921
	(%)	(%)	(%)	(%)	(%)	(%)
Shipment of iron ore from Lake Superior region	54.3	50.46	50.46	46.20	41.83	62.43
Total production of iron ore	45.4	47.92	46.37	41.70	39.97	56.08
Production of coke	31.1	38.01	35.99	34.52	31.24	38.56
Spiegeleisen and ferromanganese	76.3	80.82	80.38	56.87	44.19	81.38
Pig iron and ferrosilicon	45.2	47.47	45.21	43.86	39.30	51.72
Total pig iron and ferro-alloys	45.4	47.72	45.47	43.97	39.36	52.00
Steel ingots and castings	53.9	54.08	53.21	49.61	45.75	55.43
Steel rails	56.1	56.27	55.51	61.96	58.09	68.19
Structural shapes	47.0	49.83	54.03	43.77	43.86	47.52
Plates and sheets, including black plate for tinning	45.7	50.37	49.13	44.30	39.82	46.56
Wire rods	64.7	63.20	58.44	55.42	56.03	55.06
Merchant bars, skelp, nail-plate and other finished rolled products	35.1	40.56	39.93	38.69	35.94	45.83
Total finished rolled materials)	45.7	48.52	47.81	44.60	41.60	50.46
Wire nails	51.4	49.30	44.55	51.86	53.98	48.07
Tin plates and terne plates	60.7	60.37	58.04	48.44	45.11	48.87

The proportions for iron ore, coke, and pig iron average nearly the same for the three post-war years as for the three pre-war years cited, and in no case are they large enough to constitute monopoly control. The large

5. The writer discusses this subject in his monograph on The United States Steel Corporation, pp. 152–172.

6. Annual Statistical Reports of the American Iron and Steel Institute for the years indicated beginning with 1912.

percentages of spiegeleisen and ferromanganese for the three pre-war years and for 1921 are due to the fact that these ferro-alloys during peace times have been produced in the United States mainly by the Steel Corporation. During the years 1919 and 1920 many independent concerns which had been induced by high prices to enter this branch of manufacture were still active, but were eventually forced out of business by the depression which set in during the latter part of 1920.[7]

In respect to steel, the percentages for ingots and castings average slightly less in the second of the two periods considered than in the first, tho slightly larger for the year 1921 than for any one of the other years tabulated. In none of these years is the percentage of the country's output of crude steel as large as in the first few years of the Corporation's existence, when the proportion was over sixty per cent. In finished steel material the post-war years show on the whole a somewhat smaller proportionate output on the part of the Steel Corporation than the pre-war years, the average for each of the three-year periods being less than fifty per cent. Within this general group of steel products commonly designated as "finished," there are some noticeable changes in percentages of output. There have been appreciable increases in the cases of steel rails and wire nails, and noticeable declines in those of structural shapes, wire rods, plates and sheets, and tin and terne plate. In none of the important branches of steel manufacture, however, have the changes been sufficiently great to give the Corporation a radically greater or less power over prices.

Whatever influence the Steel Corporation has thus far exercised over prices has not been due to any monop-

7. U. S. Tariff Commission Survey, C–1. The amount of these manganese alloys used in ordinary steel manufacture is small and adds little to the cost. In ordinary "soft" steel the amount of ferromanganese added to the molten metal is about 16 or 17 pounds to the long ton of steel.

olization of the sources or agencies of supply — raw, crude, or finished.[8] The United States Steel Corporation is not a monopoly. To say, however, that no one consolidation controls the iron and steel industry of the country is not to say that the situation is free from influence by combinations or understandings, express or implied. In the early development of the steel industry of this country, prices were often fixed by pools and associations; and in later times, even after the organization of the Steel Corporation, price understandings seem to have been common. Owing to the hostile attitude of public opinion toward pools and price agreements, and the more rigid enforcement of anti-trust laws, the older associations of this character were formally discontinued. Avowed understandings, and even appearances of understandings, regarding prices no longer exist.[9]

The question arises: can an organization like the Steel Corporation, controlling approximately half the country's output of the products it sells, and acting independently, at least outwardly, of other concerns in its general price policy, so influence market conditions that the trend or course of quoted prices will show effects not apparent before its formation? In other words, can an industrial unit, not a monopoly and disavowing all ambitions of monopoly control, appreciably shape the market situation? With these questions are bound up the influences of former associations and understandings, and the industrial and financial prestige of the Steel Corporation, which leads independent producers to follow, at least in ordinary times, the price policy of the larger combination.

8. At the time of its organization the Steel Corporation did enjoy a monopoly in certain lines of wire goods by virtue of patent rights. See First Annual Report. This monopoly, however, covered but a small proportion of the company's trade.

9. The famous "Gary dinners," which were interpreted in many quarters as meetings for fixing prices, were abandoned several years ago. During the World War, prices were fixed under governmental supervision from September, 1917, to November, 1918.

A study of the price policy of the Steel Corporation necessitates a comparison of prices before and since its organization. As has already been indicated, such a comparison is complicated by changes in general price levels during the last three or four decades, and particularly since the outbreak of the World War in 1914, and by the incomplete and otherwise inadequate quotations during the years preceding the organization of the great steel trusts of the Middle West in the late nineties. On account of these complications any comparison embracing more than the published quotations on a few articles during the period before the formation of the Steel Corporation will have to be limited to the years 1898–1901;[1] and since 1901 the years preceding the outbreak of the World War will have to be separated from those including and following that conflict. Even with this segregation it must be remembered that the first of these periods was characterized by a rapid revival from the long and severe industrial depression of the middle nineties, which accounts in part for the wide fluctuations in the iron and steel prices of those years and the high levels attained during part of that time. In the third period, too, war conditions not only brought about increased prices for most commodities, but caused marked fluctuations in general price levels. Comparisons must therefore be made with considerable caution, especially when intended as a gauge of the influence of the Steel Corporation.

As has already been observed, the formation of the big steel combination was unaccompanied by any pronounced attempt to raise prices. In fact, the period of its existence before the World War began to make its

1. Weekly quotations in the Iron Age are published regularly after the fall of 1897. Prior to that time reports are made of sales at certain times, but these reports are not regular, and when made, are often indefinite. It is frequently stated in these reports that manufacturers and dealers are demanding certain prices but that no sales are made at these prices.

influence felt on American market conditions, was one of moderate price levels for ordinary steel products, with a tendency to fall rather than rise. The general price movement in the period from the beginning of 1898 to the close of 1914 may be indicated by taking the average prices per pound of what is commonly designated in the steel trade as "finished steel," including steel bars, beams, tank plate, plain wire, rails, blackpipe, and black sheets, for the years immediately preceding the formation of the United States Steel Corporation and for the years following, and also for the years 1902 to 1904, inclusive, as compared with the corresponding years a decade later, as follows:[2]

AVERAGE PRICE OF FINISHED STEEL BEFORE AND AFTER THE ORGANIZATION OF THE STEEL CORPORATION AND DURING THE EARLIER AND LATER YEARS PRIOR TO THE WORLD WAR

Years	General average (cents per pound)
1898–1901	1.92
1902–1914	1.724
1902–1904	1.877
1912–1914	1.542

It will be observed that these averages, which include some of the principal steel manufactures, show an appreciably lower level of prices for the years of the Corporation's existence prior to the outbreak of the World War than for the years 1898–1901. It should be said, however, that a comparison which included the years from 1893 to 1897 in the period before the formation of the Steel Corporation, would materially reduce the price average for the earlier interval. Owing to the absence of necessary quotations, these years cannot be included.

2. Figures compiled from numbers of the Iron Age in the period from 1898 to 1901, and from the tabulation of prices for finished steel in the Iron Age for January 4, 1923, p. 70. A slight change is made in the commodities, which does not materially affect the price averages. Thus Bessemer rails are substituted for the open-hearth rails in the case of the earlier period.

The figures presented, however, warrant the conclusion that the organization of the great steel consolidation was not followed by any marked upward movement in prices. It may be even further said that in a period of slowly rising commodity prices [3] the general movement of steel prices was slightly downward.

The years following 1914 were marked by extraordinary price advances, and steel products showed a similar trend. An average per pound of finished steel, computed for the years 1915 to 1922, inclusive, in the same manner as for the years 1898–1901 and 1902–1914, shows a price of 2.934 cents, or an increase of nearly 53 per cent over the average of the first of our three periods, and more than 70 per cent over the average of the second. Compared with commodity prices in general, this increase was by no means phenomenal. In the case of iron and steel, however, the highest point was reached in July, 1917, when the war demands upon the steel resources of the nation were exceptionally urgent compared to the capacity for immediate fulfillment. The price-fixing policy too, which was adopted two months later, checked the upward movement and in a measure reduced price levels in the steel industry for the remaining period of the war. General wholesale prices, however, with some fluctuations, continued to advance until May, 1920, when general commodity prices were 172 per cent above the level of 1913.[4]

So far as general price levels are concerned, the policy and influence of the Steel Corporation thus far seem to have been in the direction of moderation. At any rate,

3. The figures of the Bureau of Labor Statistics show an advance in the index number for wholesale prices from 113 in 1902 to 134 in 1914, unweighted, or from 109 to 136, weighted (average prices in 1890–1899 = 100). Report on Wholesale Prices 1890 to 1914, No. 181, p. 116.

4. Monthly Labor Review of the Bureau of Labor Statistics. The index number for wholesale prices in May, 1920, is given in the Review as 272, the average prices in 1913 being 100.

no tendency toward excessive or extortionate prices resulted from the establishment of the Steel Corporation. Broadly speaking, steel prices for a considerable time after 1901 lagged behind the advance of commodity prices in general; and barring the exceptional conditions imposed upon the steel trade during the first seven or eight months of 1917, the upward movement of prices resulting from the World War was less pronounced than in the case of commodities generally.[5]

The stabilization of the steel trade has been one of the most important ends sought by the organization of steel consolidations; and how far this end has been effected is the most interesting phase of our study. The results of such a study may be presented in several ways. The average departure or "dispersion" of a series of weekly or monthly quotations from an annual average or an average for a series of years, would indicate the normal fluctuations for the period considered. Such an average, however, does not show extreme fluctuations, which for our purpose are more significant; and in any considerable period of general price changes it is likely to exaggerate even normal fluctuations.[6] Single quotations representing extreme fluctuations, on the other hand, may be used as a basis of comparison with annual averages or averages for certain periods of time. But such quotations when standing alone are often the prices for one or a few unimportant transactions, and occasionally for no transaction at all. In order, therefore, to show

5. Even in 1917 the quoted prices for steel rails remained fixed at $38 per ton for the Bessemer product and $40 per ton for the open-hearth, when billets had advanced to $100 per ton and Bessemer pig iron to $57.45 per ton in July of that year. These relatively low prices or steel rails are commonly, and probably correctly, ascribed to the influence of the Steel Corporation. It is true that premiums were usually offered for prompt delivery; but the quoted prices were, none the less, real prices for those whose needs were not immediate.

6. Even where the normal average for the period varies with general broad price movements, and can be plotted on a price chart as an ascending or descending line or curve, the average degree of price fluctuation is not always exact. In the case of steel prices it would be difficult to draw.

with some degree of precision the actual ranges in the fluctuations of steel prices in different periods, annual averages and the highest and lowest monthly averages have been computed and compared with the average price for each period selected, and the percentage of greatest variation from this periodic average or mean has been indicated.

The steel products chosen for comparison constitute the group designated above as "finished steel," and the average quotation per pound is used as the price unit. In addition to this, figures have been secured complete enough to indicate monthly variations[7] in the prices of steel billets as far back as 1886, and of steel rails to 1880.[8] The periods selected in each case for the determination of the range of extreme monthly and annual variations are the years before and including 1901, showing price fluctuations before and at the time of the formation of the Steel Corporation; the period from 1902 to 1914, inclusive, embracing the pre-war time of the Corporation's influence; and the epoch beginning with 1915 and continuing through 1922, when price levels were disturbed by war and post-war conditions.

A comparison, showing the highest and lowest annual and monthly averages and the mean for each of the periods above designated, and also the average of the highest and lowest monthly quotation for each year in the case of finished steel, is made in the following table.[9]

7. For some months in the middle nineties averages had to be estimated by consulting various price charts published in the Iron Age, as several months would elapse when no quotations were given. Annual averages are published by the American Iron and Steel Institute extending far into the eighties and even earlier.

8. Quotations on steel rails extend as far back in the United States as the late sixties altho rather fragmentary and uncertain before 1880. During the eighties the substitution of steel for iron rails proceeded with great rapidity. The prices had also been sufficiently reduced to make the substitution economical.

9. The figures from which these averages are compiled are the monthly quotations tabulated in the Iron Age of January 4, 1923, p. 70 or the years 1902 to 1922, inclusive, and in separate numbers of the Iron Age for the years preceding 1902.

COMPARISON OF EXTREME ANNUAL AND MONTHLY VARIATIONS IN THE PRICES OF FINISHED STEEL FOR THREE PERIODS

Period	Average price for period (cents per lb.)	Highest annual average (cents per lb.)	Lowest annual average (cents per lb.)	Per cent of greatest variation from periodic mean
1898–1901	1.92	2.23	1.32	31.3
1902–1914	1.724	2.057	1.434	19.3
1915–1922	2.934	4.188	1.534	47.7
		Highest monthly average (cents per lb.)	Lowest monthly average (cents per lb.)	
1898–1901	1.92	2.63	1.29	37.0
1902–1914	1.724	2.136	1.366	23.9
1915–1922	2.934	5.334	1.383	81.8
		Average of highest monthly prices for each year (cents per lb.)	Average of lowest monthly prices for each year (cents per lb.)	
1898–1901	1.92	2.23	1.59	17.2
1902–1914	1.724	1.810	1.633	5.3
1915–1922	2.934	3.37	2.565	14.9

In the figures tabulated it is noticeable that the percentages of greatest annual and monthly fluctuation from the mean of the periods considered, are much less for the years 1902 to 1914 than for the four years before and during the formation of the Steel Corporation. In the years 1898–1901 the percentages of greatest annual and monthly variations from the mean of the period were 31.3 and 37.0, while the corresponding figures for the years 1902–1914 were 19.3 and 23.9. If an average is made of the highest and lowest monthly quotations for each year and a corresponding percentage is figured of the greatest variation from the means of the two periods considered, the difference is still more marked. In the first of our periods the average of the greatest monthly deviations from the mean amounted to 17.2 per cent, while that of the second was only 5.3 per cent.

These figures show that, after the organization of the

United States Steel Corporation and prior to the outbreak of the the World War, there was a pronounced reduction in extreme fluctuations of prices. Both the annual and monthly averages tended to approach more closely to a mean or norm. Fluctuations in prices continued, and in such years as 1902 and 1914, which represent high and low tides in the prosperity of the steel business during the pre-war period of the Corporation's existence, these deviations from the mean of the period were considerable. However, both extremes and the average of the extremes for each year were much less.

After steel prices began to feel the effects of war conditions in 1915, fluctuations became greater than in either of the two earlier periods. The percentages of greatest annual and monthly variations from the mean of the period included in the years 1915–1922 were 47.7 and 81.8, respectively. The rapidly rising prices beginning with the last half of 1915 and continuing till July, 1917, make this period one of extreme fluctuation. In the readjustments following the cessation of hostilities in 1918 there have been marked changes in general price levels, which have been reflected in steel quotations. There has been, therefore, little approximation to any stabilization of prices characteristic of the second of our periods. Measured by extreme annual and monthly variation from a mean for the entire eight years, the percentages of deviation are greater than in the first and second periods. An average, however, of the highest monthly prices in each of these years and a corresponding average of the lowest prices, show a somewhat smaller percentage of extreme deviation from the periodic mean than do the similar figures for the first of our three time-divisions, but much greater than for the second. One important factor in the reduction of the average of extreme variations for this period, was the price-fixing

policy which prevailed during the last three months of 1917 and most of the following year. For some fourteen or fifteen months, therefore, fluctuations in the prices of the articles included in "finished steel" were almost eliminated.

If instead of using a mean for each of our three periods, the average price per pound of steel for each year is made the basis of comparison for determining the extreme range of monthly prices, the results are somewhat different. They show comparatively small ranges in the extreme monthly deviations for the second of our periods. The extreme variations in the third period, while still great, are materially less than in the case of the deviations from the periodic means shown above. The results of this comparison may be indicated as follows:

PERCENTAGES SHOWING GREATEST MONTHLY VARIATIONS FROM ANNUAL PRICE AVERAGES OF FINISHED STEEL

Period	Per cent of greatest monthly variation from annual average	Average per cent of greatest monthly variation from annual average
1898–1901	34.8	16.1
1902–1914	12.8	6.5
1915–1922	27.4	16.6

Comparing these figures with those in the table above, it will be observed that during the years 1898–1901 the percentage of greatest monthly variation from the annual average, as compared with the periodic mean, is only slightly reduced — from 37 to 34.8 per cent. During the second period, however, the corresponding reduction is from 23.9 to 12.8 per cent, and during the third it is still more pronounced — from 81.8 to 27.4 per cent. This change is accounted for in part by changing price levels. In the second period the prices of several articles averaged perceptibly lower in the years for

1911 to 1914, inclusive, than in the years prior to the panic of 1907. The mean for the period was therefore relatively low for the earlier years and high for the later years, tending to accentuate the variations at the beginning and end of the interval. In the third period the fluctuations were pronounced when measured by deviation from a mean or norm for the whole eight years. For very obvious reasons in a time of rapidly changing commodity prices, the extreme monthly deviations from an annual average would tend to be much less than from a mean for a period covering the greater part of a decade. At the same time, it is worthy of note that the average of the extreme fluctuations is appreciably greater with the annual average used as the norm than with the periodic mean in the second and third periods.

The figures for finished steel cover a large part of the leading products of the trade. Unfortunately, quotations prior to 1898 are fragmentary for most of the commodities included, and far from precise.[1] The first of our three periods is thus limited to four years, and years characterized by a pronounced revival from a long-continued depression. The question arises: would a longer span of years, covering a decade or more, show on the average as great deviations from the mean of the period as the shorter interval, and as marked a difference from the average range of fluctuation in the second period?

Monthly quotations on steel billets and steel rails are sufficiently complete to enable one to determine the general price trend and fluctuations on these commodities as far back as the middle or early eighties. As these products constituted at the time a very large proportion

1. In some instances quotations appearing in the Iron Age cover iron as well as steel. Thus, prior to 1896 iron bars are quoted in place of steel bars, in several instances. Prices are also given very generally in such a way that anything like a precise or approximate quotation is impossible.

of the country's total output of rolled steel,[2] their prices are as significant for the time as those for the group included in "finished steel." Furthermore, steel billets are produced by a relatively large number of manufacturers and enter into the production of a number of finished articles, being therefore especially sensitive to market demands; whereas steel rails, being made in appreciable quantities in only a very limited number of works, serve almost entirely one business and are therefore more directly influenced by a conscious and definite price policy. A comparison of the extreme price fluctuations of the period before and during the organization of the United States Steel Corporation with those of the pre-war and war and post-war periods of the Corporation's existence, in the cases of these two products, will serve to bring out more clearly than our earlier comparison the power and influence of the great steel consolidation. Following the method of our earlier comparison of the prices of finished steel, the results may be tabulated as follows:

2. In the period before the organization of the Corporation, the manufacture of rails may be said to have constituted the backbone of the steel industry. Of the total rolled output the proportion of rails ranged in most years from 20 to 40 per cent of the total, and far exceeded that of any other one group. In late years the production of steel rails has amounted to only about 10 per cent of the total rolled output. The proportionate output of plates and sheets, and in some years structural shapes, is much larger.

COMPARISON OF EXTREME ANNUAL AND MONTHLY VARIATIONS IN THE PRICES OF STEEL BILLETS AND STANDARD STEEL RAILS FOR THE THREE PERIODS [3]

STEEL BILLETS

Period	Average price for period (per gross ton)	Highest annual average (per gross ton)	Lowest annual average (per gross ton)	Per cent of greatest variation
1886–1901	$24.19	$33.00	$15.08	37.7
1902–1914	25.15	30.32	20.08	20.6
1915–1922	43.70	70.78	22.44	62.0
		Highest monthly average (per gross ton)	Lowest monthly average (per gross ton)	
1886–1901	$24.19	$38.75	$14.00	60.2
1902–1914	25.15	32.37	19.00	28.7
1915–1922	43.70	100.00	19.25	128.8
		Average of highest monthly price for each year (per gross ton)	Average of lowest monthly price for each year (per gross ton)	
1886–1901	$24.19	$27.99	$20.74	15.7
1902–1914	25.15	27.25	22.71	9.7
1915–1922	43.70	53.45	35.41	22.3

3. The prices for steel billets are those for Pittsburgh, Pa., and for steel rails, Pennsylvania mills.

STEEL RAILS [4]

Period	Average price for period (per gross ton)	Highest annual average (per gross ton)	Lowest annual average (per gross ton)	Per cent of greatest variation
1880–1901	$32.84	$70.00	$17.62	113.2
1902–1914	28.00	28.00	28.00	0.0
1915–1922	43.89	57.00	30.00	31.6
		Highest monthly average (per gross ton)	Lowest monthly average (per gross ton)	
1880–1901	$32.84	$85.00	$16.50	158.8
1902–1914	28.00	28.00	28.00	0.0
1915–1922	43.89	57.00	30.00	31.6
		Average of highest monthly price for each year (per gross ton)	Average of lowest monthly price for each year (per gross ton)	
1880–1901	$32.84	$37.12	$29.66	13.0
1902–1914	28.00	28.00	28.00	0.0
1915–1922	43.89	46.37	41.37	5.7

4. Bessemer steel rails from 1880 to 1914, inclusive, and open-hearth from 1915. During the past decade the bulk of the steel rails made in the United States has been produced from open-hearth steel.

It will be observed in the case of steel billets that the highest and lowest annual averages in the period from 1886 to 1901 were $33 and $15.08 per gross ton. These averages were for the years 1886 and 1897, respectively, and the average for the latter of these years showed a variation from the mean of the period of 37.7 per cent which is appreciably greater than the corresponding deviation in the case of finished steel. The extreme fluctuations in monthly quotations during the same period were also notably greater than the corresponding variations in finished steel, the highest monthly average being $38.75 per gross ton, and the lowest, $14 per gross ton. The percentage of greatest deviation from the mean was 60.2.

During the second of our periods the percentage of greatest annual and monthly variations from the periodic mean was greater than in the case of finished steel, but much less than in the first period. In other words, the highest and lowest annual and monthly departures from the average for the period were greatly reduced in the years 1902 to 1914, inclusive, but were still more pronounced than in the case of the standard commodities included in finished steel.

The prices of few articles were more profoundly affected by the World War than was the price of steel billets. From January, 1915, to July, 1917, the price of steel billets rose from $19.25 to $100 per gross ton, an increase of over 400 per cent. The latter price, too, was more than 128 per cent above the mean for the war and post-war period. The average for the entire year of 1917 was itself over 60 per cent above the mean. These figures for the extreme annual and monthly deviations in our third time-interval are notably greater than the corresponding percentages in the case of finished steel.

When a similar comparison is made of the averages of

the highest and lowest monthly prices and their deviations from the periodic mean, it is noteworthy that the percentage of greatest average departures is somewhat larger in the first period for finished steel, but considerably larger in the second and third periods in the case of billets. This difference is partly explained by the fact that the first of our periods is much longer in the case of billets than in that of finished steel, and covers several years during which no special demands were made upon the billet market. Another explanation is that in the days before the organization of the Steel Corporation the prices of steel rails and a few other products which are included in our designation of finished steel, fluctuated much like those of other products, whereas in later times they have been comparatively stable. For these reasons billet prices show relatively greater variation from the periodic mean in the years beginning with 1902 than do the prices of finished steel.

The figures for steel rails show on the average less fluctuation than those for either billets or finished steel [5] in all three periods. It is true that the percentages for the greatest annual and monthly deviations from the mean of the first period are greater than the corresponding percentages of either of the other two classes of products. The exceptionally high prices shown for the highest annual and monthly averages — $70 and $85 per gross ton respectively — were for the year 1880, when they were nearly double what they had been a few years before. Similar tho less pronounced increases in price took place in 1886 and 1899. During most of the other years prices exhibited much less variation, and as a consequence the average of the extreme monthly departures from "normalcy" was relatively small.

5. While steel rails are included in finished steel, it constitutes only one of several products from which the average price of the steel is computed.

One factor which operated to steady the prices of standard rails during the years preceding the formation of the Steel Corporation was the organization of a strong rail pool. This pool was formed in 1887,[6] and consisted at first of fifteen members. To each member was allotted a percentage of the total yield, with penalties for excesses beyond the individual allotment. Firms were to be kept from any temptation to cut prices in order to secure more business. The pool disbanded in February, 1897, shortly after which the price of standard steel rails reached $16.50 per gross ton, the lowest in the history of the country. The pool was reorganized in 1899, and continued in existence, for some years at least after the formation of the Steel Corporation, under the name of the Steel Rail Association.[7]

During the years 1902 to 1914, inclusive, the quoted price of Bessemer steel rails remained fixed at $28 per gross ton, and this price continued into our third period, till May, 1916, when it rose to $33 per gross ton. Rails made of open-hearth steel were gradually supplanting the Bessemer product during these years, and up to October 22, 1921, were regularly quoted at $2 per gross ton more.[8] Altho premiums were offered for prompt delivery, $28 per ton (or $30 in the case of open-hearth rails) remained the regularly quoted price, without any variation until war conditions had seriously affected the steel market in the United States.

It was not until nearly a year after the World War had begun to make its influence felt on the prices of other steel products, that the quotations for steel rails

6. Iron Age, November 16, 1893.

7. Iron Age, November 3, 1904, p. 45. At the time of the dissolution of the old pool in 1897, the members with their allotted percentages were as follows: The Carnegie Company, 53.50; the Lackawanna, 19.00; the Cambria, 8.25; the Bethlehem, 8.25; the Pennsylvania, 8.25; and the Maryland, 2.75. Iron Age, February 11, 1897, p. 18.

8. Since October 22, 1921, Bessemer and open-hearth rails have been quoted at the same price.

showed any change in response to altered market conditions. In May, 1916, the prices of steel rails were raised, as above stated, to $33 and $35 for the Bessemer and open-hearth products, respectively, and in December of the same year, to $38 and $40. During the following year the latter prices continued to be quoted until the close of September, after which no quotations were given until January, 1918.

The contrast between the prices of steel rails and steel billets during the period from January, 1915, when the steel market in this country was still unaffected by the war, to July, 1917, when the effects of the war upon steel prices had attained their climax, is worthy of some attention. The price movements in the cases of these two products may be indicated by showing the January and July quotations during these years as follows:[9]

	Bessemer steel rails at Eastern mill (per gross ton)	Bessemer steel billets at Pittsburgh (per gross ton)
January 1915	$28.00	$19.25
July 1915	28.00	21.38
January 1916	28.00	32.00
July 1916	33.00	41.00
January 1917	38.00	63.00
July 1917	38.00	100.00

The striking difference in the advances of the prices of steel rails and of steel billets was not due in the main to any very great variance in the demand for these products, altho, on account of the uses to which billets are put, the consumption of this product is more general than that of rails. There was, as a matter of fact, an urgent demand for both. The policy, however, of the rail-makers was to prevent the growth of a sky-rocketing market with its inevitable collapse at a later time.

This policy on the part of the rail manufacturers and of others was to some extent the cause of curious anom-

9. Quotations taken from Iron Age.

alies. With the free operation over much of the steel market of the law of demand and supply, and with free and intense competition among buyers to secure necessary supplies incident to urgent war requirements, the prices of coke, pig iron, and various finished steel products came to occupy curious relations with one another. In the early summer of 1915, Connellsville furnace coke sold at about one-eighth the price of basic pig iron at Valley furnaces, while in July, 1917, with pig iron quadrupled in value, coke sold at one-fourth to two-sevenths the pig-iron price. In the early part of 1915, Bessemer billets were quoted 35 per cent higher than Bessemer pig iron; but in July, 1917, they were 75 per cent higher. The maintenance of relatively fixed prices for heavy, standard-section, steel rails in a runaway market led to the interesting anomaly of Bessemer steel rails being quoted at $38 per gross ton while the pig iron out of which they were made was bringing a price nearly twenty dollars higher.[1] A similar but less pronounced policy on the part of other steel manufacturers to steady the market, helped to bring about the curious phenomenon of wire rods selling at a higher price than wire nails, skelp than pipe, and galvanized sheets than spelter.

Under the price-fixing policy which began in the fall of 1917 and continued till the close of the war, these anomalies were of course eliminated. Steel rails, which were not included among the products subject to the price-fixing policy of the committee which acted under government supervision, were not, as already mentioned, quoted during the closing months of 1917. During 1918 and January and February, 1919, they were quoted at $55 per gross ton for the Bessemer product and $57 per

1. The writer discussed this situation to some extent in an article on "Price Fixing in the Iron and Steel Industry," in the Quarterly Journal of Economics, August, 1918. See also Iron Age, July 26, 1917, p. 260.

gross ton for the open-hearth.[2] From March, 1919, to March, 1920, the quoted prices were $10 less. From the latter part of March to November of the same year, the 1918 prices were again in effect. During the remainder of 1920 and until October 22, 1921, the quoted prices for Bessemer and open-hearth rails were $45 and $47 respectively. At the last-named date the prices of both these standard rails were reduced to $40. This price prevailed until October, 1922, when it was advanced to $43.

It is noteworthy that, during the war and post-war period with the rapid changes in price levels, there was evidently a definite purpose on the part of rail-makers to stabilize prices. As in the pre-war period, quotations remained fixed for considerable intervals of time, during which the prices of most other products fluctuated greatly. These intervals of course were short compared with the period lasting from April, 1901, to April, 1916, but the same effort at stabilization is apparent. In the case of steel rails this effort, at least so far as quotations are concerned, was measurably successful.

The proportionate departures of extreme monthly averages from annual averages in the cases of steel billets and steel rails, show some interesting features in short-time fluctuations. These deviations may be indicated by giving the average per cent of the greatest monthly variation from the annual average of each year, the per cent of the greatest monthly variation from the

2. The increase from $38 and $40 per gross ton in September, 1917, to $55 and $57 per gross ton in January, 1918, was due to adjustments resulting from the price-fixing policy than put into operation and to the taking-over of the greater part of the railroad mileage of the country by the Federal Government in December, 1917. During the price-fixing period of the war steel commodities were graded largely according to stage of production. The Government becoming the principal purchaser of rails paid uniform prices, which were in accord with the prices agreed upon by the price-fixing committee with reference to other iron and steel commodities, and in a measure in accord with certain cost data secured by the Federal Trade Commission from the Steel Corporation and independents.

annual a age in each period and the per cent of greatest varia in the year of least monthly fluctuation.

PERCENTAGES SHOWING GREATEST MONTHLY VARIATIONS FROM ANNUAL PRICE AVERAGES IN THE CASES OF STEEL BILLETS AND STEEL RAILS

Period	Average per cent of greatest monthly variations from annual average	Per cent of greatest monthly variation from annual average	Per cent of greatest monthly variation from annual average in year of least deviation
STEEL BILLETS			
1886–1901	18.3	46.6	5.3
1902–1914	11.2	22.5	5.4
1915–1922	16.1	41.3	3.9
STEEL RAILS			
1880–1901	13.7	32.4	1.1
1902–1914	0.0	0.0	0.0
1915–1922	9.2	17.6	0.0

In the cases of both steel billets and steel rails the greatest monthly variations from the annual averages occurred in the first of our periods. The extreme fluctuations are materially less in the prices of rails than in those of billets, altho a longer period is covered for the former than for the latter, and one which embraces the years 1880 and 1881, when iron and steel prices oscillated considerably. This difference may be due in part to efforts of rail-manufacturers to control prices, efforts which for part of the time at least, as we have seen, were measurably successful. The percentage of greatest monthly variation from the annual average in the year of least deviation in the case of steel billets is approximately the same in the second as in the first period. This fact is noticeably different from our former observations concerning the pronounced reduction in price variations in the second period. While the greatest monthly departures from annual averages are much reduced, fluctuations of more limited range seem to have been as characteristic of the second as of the first period,

in the case of steel billets. The small percentage of variation in the third period for the year of least deviation is of little significance, as the year was 1918, when the price-fixing policy prevailed.

The monthly prices for rails show less fluctuation when the annual average is used as the basis of comparison than when the average for a period is so employed. An obvious explanation of this is that an annual average is nearer the norm or mean for a prevailing price level than would be the average for a long span of years. This, however, is not the sole explanation. As has already been pointed out, the prices of rails were fixed for long periods of time, during which no change in quotations took place. Even before the formation of the Steel Corporation, rail prices would remain comparatively stable for several months when the quotations on other products varied considerably.

The results of the above comparisons show that in the years following the organization of the United States Steel Corporation up to the time that the World War began to influence market conditions in this country, the extreme fluctuations in prices which had hitherto characterized the trade were greatly reduced. This reduction was pronounced in the cases of extreme annual and monthly averages as compared with what might be called the normal prices for each of the two periods considered. The average of the extreme monthly deviations for each year was also materially less in the second period than in the first, whether the basis of comparison is the periodic mean or the annual average.

The figures for steel billets and steel rails show that the wide range in prices before the formation of the Steel Corporation was not due to the violent fluctuations of the few years from 1898 to 1901, which were characterized by a sharp recovery from the severe in-

dustrial depression of the middle nineties. The widest monthly deviations from the periodic mean and from the annual averages took place in these two instances in the eighties and middle nineties.[3] The averages for extreme variations in the periods covered by the quotations for billets and rails, are only slightly different from those of the shorter interval covered by finished steel.

Whatever influence operated to stabilize prices in the years from 1902 to 1914, inclusive, was of little avail in cases of most products in the runaway market of the years 1916 and 1917, and was only moderately felt after the close of the price-fixing period in 1918. In the instances of finished steel and steel billets the extreme annual and monthly fluctuations were much greater in the war and post-war years than in either of the two preceding periods. The averages of extreme monthly deviations were also large in the third period, but much larger in the case of billets than in that of finished steel.

The policy of price stabilization has been more effective with standard steel rails than with any other product. Not only was there a uniform price quoted during a period of fifteen years before the pressure of war conditions forced a change, but price advances and reductions during the years beginning with 1916 were less drastic than those of other products. Compared with the fluctuations of our first period, the variations of the third, under the severe strain of the World War and the general unsettlement following, have been small.

During peace times the United States Steel Corporation has apparently been a force in steadying the market for products sold as steel. Its influence, however, has not been sufficient in the case of most products to prevent great and violent oscillations in prices when this

3. In 1880 in the case of steel rails; in 1886 and 1897 in the cases of both rails and billets.

market has been put under severe strain. The instance of steel rails is exceptional. The fact, however, that the percentage for the average of the greatest monthly variation each year from the mean of the period in the case of finished steel is appreciably less in the third period (14.9 per cent) than in the first (17.2 per cent) may indicate that a stabilizing influence was at work in the cases of an appreciable number of the products forming this group. This seems to be further borne out by the much larger percentage for this average in the third period for steel billets.

The question whether any market can be truly stabilized without some influence monopolistic in character does not concern us here. It may be pointed out, however, that, in the period before the organization of the Steel Corporation, the prices of iron and steel products were more or less influenced by pools and associations. Our figures show that these organizations were not sufficiently powerful to keep prices under control, particularly in times of depression. A considerable part of the membership of these combinations was taken over by the Steel Corporation at the time of its organization. While this consolidation did not of itself absorb a large enough proportion of the country's trade to constitute a monopoly, its size and financial backing gave it a prestige which made it a potent influence in the steel industry. Its attitude, furthermore, toward independents has never been characterized by any attempt at what is called "destructive competition." In fact, its control of the steel output of the country is slightly less at the present time than at the beginning of its existence. This union of financial or industrial prestige with a certain far-sighted magnanimity toward competitors probably led to the adoption, by a sufficient number of independents, of what was apparently the price policy of

the Corporation, to give a measurable degree of control over the country's output. During peace times the resulting unity of action was sufficiently effective to reduce materially the violent fluctuations of the period before the organization of the Corporation. In the case of steel rails, with only a few producers, and with the aggregate output of the independents making about 40 per cent of the country's output, associated action has been especially effective, and apparently continues so.

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THE FUTURE OF RAILWAY CONTROL

SUMMARY

I. Canada. The three transcontinental systems, 32. — The Grand Trunk and Canadian Northern, consolidated as the Canadian National, under government ownership, 34. — The rate problems; the problem of control, 36. — II. Great Britain; the war situation, 38. — The act of 1921: compulsory consolidation; rates fixed, 40. — III. The United States; Transportation act of 1920, 43. — Consolidation, on principles different from the British and Canadian, 44. — Rate regulation and labor adjustment, 46. — IV. Significance of the changes; competition almost eliminated, 47. — Returns to investors virtually guaranteed, 48. — Eventual consequences: not stockholders alone, but bondholders, executives, and employees will come to have a share in management, 49.

In the years of the war we became accustomed to living under abnormal conditions, to seeing revolutionary changes in our habits and institutions, to having everything bent to serve the one great national purpose. We saw the value of unified effort, of the elimination of waste and wasteful competition, of what could be accomplished with a motive strong enough to sink individual interest in the common good. But with the passing of the war and of the bubble of unsound prosperity, reaction came and men cried for a return to "normalcy" and "tranquillity." And yet I venture to say that in the past three years there have been in almost every one of the leading countries of the world more fundamental changes that will permanently affect our political and economic life, than were caused by all the upheaval of the war itself. To go back to the pre-war conditions was in most countries an impossibility. New courses had to be found, and in the effort to solve the new problems new principles have been adopted, the import of

which has been realized by very few, even of those who have participated in them.

Among the institutions which were most thoroly shaken up by the war were the railroads. Within a week of the opening of the war steps had been taken, even in Great-Britain, the temple of free competition, to bring all the railway companies and services under a unified control. Step by step that control was extended till scores of lines and systems that had been in keen competition were brought into the service of one master and forced to forget their selfish interests. In the United States the same course was followed. Voluntary cooperation gave place to a joint board; that to national control under a single director; and 1800 roads were made to work as one. But when the war was over, the statesmen of these and other countries were faced with the extremely difficult problem of reconstituting the railway systems, of finding methods by which they might combine the proven advantages of unified management with the inherent merits of independence and individual initiative. The solutions of these after-war railway problems have been, in each of the principal countries, of a character that might well be called revolutionary. It is the purpose of the present article to review just what these solutions have been, then to consider the essential character of the changes, and finally to consider what are likely to be the next logical developments as affecting the real control of the railways of these countries.

I. Canada

In spite of its relatively small population, Canada is a country of such extent and resources that its problems are in many respects already of the first magnitude.

With an area of fertile lands and varied resources equal to all that part of the United States north of Mason and Dixon's line and its continuation to the Pacific, with an industrial development that gives it the seventh place among the industrial nations, and an overseas commerce of equal rank, and with institutions deliberately designed to combine the best of those of Britain and America, it has been forced to grapple with the largest problems ahead of its time. Most of all, it has had to meet the problem of transportation — the most vital of all problems in a country of great distances.

At the opening of the war Canada had three transcontinental systems for a country of 8,000,000 people. Its eldest — the Canadian Pacific — had passed through the struggles of birth and childhood, and with the development of the country had grown into one of the great railway systems of the world, with its arms extended across both oceans and with an efficiency fit to meet any competition. Its second — the Grand Trunk and Grand Trunk Pacific — was the belated product of the ambition of the country's first important railway to compete with its younger rival for transcontinental trade, and of Canadian statesmen for a competing cross-country system wholly within the limits of the country. By 1914 the main lines had been completed and were in operation — with a road-bed of unrivaled quality and cost and not sufficient traffic to pay operating expenses. The third child, the Canadian Northern Railway, was the product of two wizards of finance and construction. Had the promoters been content with the development of a Western system only, they would to-day be the honored heads of a flourishing independent company. But the lure of the transcontinental was too much for them, and the building of a third and altogether needless Eastern system wrecked them and almost wrecked the

country. With the cessation of immigration consequent upon the war, the two newer railways found themselves confronted by impossible carrying charges, and after several years' struggle there was left only the alternative of bankruptcy or government ownership.

By 1916 the Government of Canada found it necessary to come to the rescue of both the Canadian Northern and the Grand Trunk Pacific and to advance the funds required to meet interest payments. By 1917 it was evident that further and larger advances would have to be made. The Government decided that, if it had to meet the deficits, it might as well take the roads over and own them. A bargain was driven with the owners of the stock of the Canadian Northern by which the bonds of the company were assumed and an arbitration directed as to the value of the stock, limited to a maximum which squeezed out the water. Thus Canada became the owner of a railway with 9479 miles of track extending from Montreal to the Pacific, and by joining it with the Intercolonial, — a road of 1592 miles built as part of the Confederation bargain, and operated ever since by the Government at a loss, — obtained a complete transcontinental system. It already owned over 2000 miles of the National Transcontinental, which had been intended to be linked up with and leased to the Grand Trunk Pacific. The bonds of this last-named road had been guaranteed by the long-established Grand Trunk, with over 5000 miles of line through the best portions of the old provinces and good connections with the United States, and the Government declined to relieve the Grand Trunk from this guaranty. In other words, it declined to take the lean without the fat. By 1920 the directors of the Grand Trunk, finding themselves unable to carry the guaranty, yielded, and agreed to turn over the whole road, on the Government assuming the

bonds and submitting the value of the stock to arbitration. Thus step by step the Government acquired the ownership of every important railway in the country except the C. P. R.

It was not from deliberate intention that the people of Canada came to be the owners of a railway system even larger than the C. P. R. While there is a strong body of opinion in favor of public ownership, there are few who would willingly tackle so great and burdensome an undertaking as these bankrupt roads. Large parts of these roads have been built years before their time, and until the parts of the country which they serve have been developed there can be little hope of profitable operation. The first full year of government ownership of the consolidated lines, now known as the Canadian National, ended with an operating deficit of $17,000,000 and a total deficit, including fixed charges, of $70,000,000. That cannot, however, be quoted as an example of the failure of government operation. If the roads had remained in private hands they would not have run at all, for no private capital could stand such deficits. But it does show what a stupendous task the people of Canada have undertaken.

The Canadian National now ranks as the largest single system on the continent, with a mileage of 22,646 compared to 18,859 for the C. P. R. and 15,000 for the Santa Fé, the largest of the American systems. It can offer alternative routes almost the entire distance from the Atlantic to the Pacific. Tho it has lean areas, it occupies many of the choicest sections in both East and West. It has good connections with Britain and Europe as well as into the United States. Already the financial outlook is improving. The second year, tho the road was still operated by a temporary board, saw the operating deficit wiped out and a new spirit all through the service.

Now, with a new board and a president of acknowledged ability and experience, and the good-will of the public, there is every reason to expect a steady and rapid improvement in both service and financial returns. In July the president made the encouraging statement that there was a good chance that within three years the Canadian National Railways would cease to be a burden on the taxpayers. The feeling in Canada to-day is unquestionably one of confidence and optimism.

The effect on rate-making of the nationalization of more than half the mileage of the country will prove a most interesting study for the next few years. To base rates on the needs of the National would put untold millions in the pockets of the C. P. R. as well as burden the users of the railways with the whole cost of premature lines and the political mistakes of the whole people. To base rates solely on the needs of the C. P. R. — one of the most efficient and successful railways in the world and built originally largely from public gifts — would impose losses on the National lines for the next ten or twenty years of such vast amounts as to constitute a serious danger to the national finances. Every demand for reduction in rates is equivalent to a demand for increased taxes. How acute this contrast may become was seen in the 1922 session of the Dominion Parliament. During the war Parliament suspended for a limited term the operation of an agreement made in 1904 with the C. P. R., by which that railway, in consideration of assistance in the construction of the Crow's Nest Pass branch through the Rocky Mountains, agreed to maximum limits on the rates to be charged on the principal products of the Western provinces. With the limit suspended, the Railway Commission promptly granted higher rates. The suspension expired on July 7, 1922, and before that date Parliament had to determine

whether to keep up the rates, or restore the limit with the inevitable consequence of heavy losses to the National Railway. The Western members were, at the same time, the parties most interested in getting the reductions and most decided in their support of nationalization. The result was the restoration of the old rates on the two principal commodities, grain and coal, with a resulting loss of revenue to the railways in the first six months, estimated at $6,500,000 for the National and $8,000,000 for the C. P. R.

But will the country as a whole submit to large deficits year after year — deficits which cannot be wiped out by any management till the country is developed? Will the majority insist on rates high enough to cover all charges? Will the employees insist on maintaining wages and conditions that make large savings in cost impossible? On the other hand, will the country consent to the swelling of the already large profits of the C. P. R.? There would seem to be only one way out of this difficulty — rates high enough to take up most of the deficit on the government lines, coupled with a fixed limit on the profits payable by the C. P. R., and the appropriation of a large part of its surplus along the lines of the American act of 1920.

Even more important than rates was the question where the control of the new National system would be vested. Would the owners of the capital — in this case the State — retain the full control of the Board of Directors as in the case of private companies, or would a much larger authority be vested in the operating chiefs? Would the employees as such be given representation on the directorate? It is as yet too soon to answer these questions definitely. Evidently it is intended to place a very large measure of power and responsibility in the

new President, Sir Henry Thornton. He has already intimated his intention to vest a large measure of authority in regional heads. Several places on the Board were left vacant, with the understanding that they would be filled later by selected executives, and two of those already nominated are there solely because of practical experience in railway work. So far labor has been recognized to the extent of one member — the President of the Labor Congress of Canada. But there is little point in the representation of labor other than the employees themselves, and in time a plan will probably be worked out which will give a direct representation on the Board to the men upon whose loyalty and enthusiasm so much of the success of the whole undertaking will depend. With such great difficulties to overcome, there is on this system a need, to a very unusual degree, of giving the staff, both executives and workingmen, the sense of responsibility which can come only from sharing in control.

II. Great Britain

Immediately upon the opening of the war all the railways of Great Britain passed under the Government, and became subject to the direction of an Army Railway Council. They remained under control until August 1921. During all that time the railways, while carried on by their usual officers, subordinated all individual interest to the common cause, and problems were dealt with on a national basis. On the shareholders' side satisfaction was secured by the guaranty given by the Government to make up any ascertained deficiency in the annual aggregate net receipts of all the railways taken over, as compared with the aggregate for the year 1913. When, early in 1915, the rising cost of living forced demands for increased wages, it was agreed that the com-

panies should bear the first 25 per cent war bonus and the government all subsequent bonuses. While the war activities lasted, the vast increase in traffic created revenues on the railway side of the account which showed a handsome profit for the Government, in spite of increased wages and altered conditions in favor of the workmen. But with the end of demobilization and with the costs incurred in restoring the roads to pre-war conditions, deficits grew to very serious dimensions. Government, railway companies, and people, especially financiers, were forçed to grapple with an extremely difficult problem. Up to this time there had been in Great Britain no tribunal having power to determine the rates which railways might charge. When companies for the purpose of carrying on railways were first incorporated, it was by special act of Parliament, which fixed maximum rates and tolls that might be charged in return for the grant of rights of expropriation and other powers. At one time there were nine hundred such acts. Then acts were passed providing for uniform classification; but still the companies fixed their own charges subject to the prescribed maxima, and the rates in 1914 did not differ greatly from those in force in 1870. In 1913, gross receipts of the railways amounted to £134,650,000 and the net revenue to £48,050,000, a sum sufficient to pay interest and dividends averaging approximately 4¼ per cent upon the capital invested in the business of railway transport and its accessories. But between 1913 and 1921 the expenditures increased from £86,000,000 to £275,000,000, and it was obvious that the greater part of this increase was beyond control. Evidently some drastic and thoro revisions would be necessary to meet so greatly altered conditions.

The problems were tackled with characteristic British thoroness. By direction of the Minister of Transport a

Rates Advisory Committee was set up, with instructions to investigate and report upon the principles on which rates should be fixed, the classification of all goods, and the rates proper for special classes of goods. The report of the Committee [1] is a masterly discussion of the many intricate and difficult problems with which it had to deal, not alone of the questions of rates and classifications, and the functions and methods of the new Rates Tribunal which it proposed, but also of the most difficult problem of the basis of valuation upon which profits should be calculated. Contemporaneously, another commission was investigating the claims of the railway companies for compensation; and the Government negotiated a friendly settlement which involved a further payment to the companies of £60,000,000. At the same time the Government was investigating other problems, and soon came to the conclusion that the continued existence of so many companies with such varied financial strength was impossible, and that the only solution lay in the grouping of the roads along the lines of the French system.

In May, 1921, the Government's proposals were submitted to Parliament and, after much discussion and some changes, became law in August and fully effective by January 1, 1923. To appreciate the importance of the changes, it must be remembered that there are over a million people in the island who are holders of railway shares or debentures and over seven hundred thousand employed in the service. For our present purpose the most important provisions are those relating to the amalgamation of the roads, the fixing of a basis on which to compute dividends, and the relation of the employees to the companies.

1. Report of Rates Advisory Committee, Ministry of Transport, on General Revision of Railway Rates and Charges, 1920 (Cmd 1098).

The bill [2] proposed that the 120 railways should be consolidated into six regional groups, each having in large measure a monopoly in its own territory, the principal companies being classed as constituent companies and the minor ones as subsidiary companies. The companies were given an opportunity to agree if they could on the terms of amalgamation or absorption, but the amalgamation provided for was compulsory. It was the deliberate intention that the weak should be swallowed up by the strong, and thus an average of earning capacity arrived at which would make the principle of uniform rates apply all over the country in such a way as to give virtually uniform returns to the holders of all railway shares. The objections to the grouping proposed, especially from Scotland, resulted in further consolidation, with the result that all the railways of Great Britain are now combined into four systems serving almost distinct areas. They are: the Southern with 2200 miles of first track; the Great Western (including Wales) with 3753 miles; the Northwestern (including the Midland and West of Scotland) with 7464 miles; and the London and Northeastern (including the Eastern and East of Scotland) with 6464 miles.[3]

Standard rates are to be fixed by a permanent tribunal, and are to be such as will with efficient and economical management enable the combined companies in each group to earn a net revenue equal to that of 1913. It is said in some quarters that 1913 was a peak year and therefore the basis is one that is too favorable to the companies. But probably any advantage which may thus be gained will be offset by the fall in the value of money dividends; and if the value of money changes,

2. Railways Act 1921 (11 and 12 Geo. V, ch. 55).

3. See Railway Map of the British Isles, showing the constituent roads and the consolidated systems, published by George Philip and Son, London. The designations given in the text for the four systems are meant merely to indicate the areas covered.

the basis can be changed. No attempt was made to fix a rate in the act, as in the United States, tho this was recommended by the Rates Advisory Committee. Further, it is provided that, if the rates fixed yield a return exceeding this standard, four fifths of the excess is to be set apart for reducing rates. Thus principles are established which virtually stabilize the return on investment in railway stock. While there is no Government guaranty, the result which must flow from the statutory direction to the tribunal is not far short of a guaranty. It will be noted that, since profits were in 1913 calculated on the basis of issued capital, that becomes the permanent basis of valuation rather than any physical or commercial valuation. The variations in these bases are not, however, serious in Britain and the problem does not present the acute difficulties that it does in the United States. Evidence was given which showed that the debenture and share capital of all the railways issued up to 1913 was £1,120,867,965, and that the market value of such capital estimated upon the mean prices for the years 1911–12–13, was £1,131,636,697.

The chief gain, from the employees' standpoint, was in securing a uniform basis for wages and conditions throughout the kingdom and a National Wages Board. They were offered representation on the directorates, but preferred to secure the National Wages Board. It is said by some that the men did not want to name directors; but the more accurate statement appears to be that they could not get all they wanted, and took that which they considered most necessary. Their agitation for nationalization received so little support that it had to be abandoned.

III. The United States [4]

From 1906 to 1916 the position of the railways of the United States had been steadily growing weaker. With revenues limited by fixed rates, with expenses growing each year, with the increasing scale of prices, and with the public actively hostile, investors felt shy of railway securities, and the companies were unable to meet the cost of necessary extensions and in many cases unable to meet their obligations. By 1916 one sixth of the mileage of the country was in the hands of receivers, a mileage greater than the entire mileage of either Great Britain or Canada. On the other hand, there were many exceedingly prosperous roads, paying good dividends and providing for betterments and extensions out of revenue.

The war brought a large expansion of traffic through the furnishing of supplies to the Allies, thus improving the revenues but straining the inadequate equipment. With the entrance of America into the war both of these results were intensified. The companies tried to meet the situation by voluntarily combining in the appointment of a Railway War Board of five members, to which nearly all the roads delegated complete control of operation. But this proved inadequate, and at the end of the year the President stepped in and placed all the roads under government control and under a single Director-General. That system lasted from January 1, 1918 to March 1, 1920. In the first year, while the war lasted, it was highly successful. With the relapse to peace conditions, the system broke down. When the need for a patriotic submission of individual interests to those of the country had passed, every interest clamored for its own way. The owners and managers clamored

4. For a fuller account of later developments in the United States, see W. J. Cunningham's recent admirable book, American Railroads: A. W. Shaw Co., 1922.

for the right to run their own business, the men for large increases in wages, the shippers for lower rates, and the general public for competitive service. By the autumn of 1919 Congress recognized the necessity for buckling down to a solution of one of the largest and most complicated problems it has ever had to face. The result was the Transportation Act of 1920 — the Esch-Cummins law, so-called.

The Transportation Act was almost as revolutionary a measure as the British Railway Act of 1921. It almost completely reversed the policy that had been pursued by the legislators of the United States for fifty years. It set about to encourage that very consolidation of railways which it had been the aim of previous legislation to prevent. It recognized the stockholder and bondholder as necessary parts of any railway system and therefore entitled to a living wage. It recognized the paramount interest of the general public by greatly increasing the powers of the Interstate Commerce Commission and creating a national Railway Labor Board, on which the public representatives hold the sole or controlling position. It even took drastic steps to protect the railway companies from the attacks of state legislatures and commissions.

In respect of consolidation the change of policy was a sweeping one. There were at the time no less than 1800 independent railway companies in the country. The act directed the Interstate Commerce Commission to prepare a plan for the consolidation of railway properties into a limited number of systems, so arranged that a uniform set of rates will give to each of the systems substantially the same return upon the true value of the respective properties. This involves the absorption of weak roads by strong ones and the building up of a comparatively small number of great consolidated systems

operating throughout at least a large section of the country. The act did not adopt any of the proposals for fixing the number of such systems, but the intent of the act has been carried out by the Commission. First the Commission divided the country into three sections — Eastern, Southern and Western. Then it instructed Professor Ripley of Harvard to make a draft plan, by which he proposed to create 21 systems. Then the Commission considered his plan and further reduced the number to 19.[5] This is the plan which is now submitted for the consideration of all concerned; and, after due hearings, this plan, or some modification of it, will presumably be settled upon as the definite and official plan of consolidation.

The method adopted differs from both the British and Canadian plans. It does not contain the compulsory feature. All it does is to lay down the lines upon which consolidations may take place and upon which the companies are virtually invited to combine. The companies are left to make their own terms, but, under the shadow of a scale of rates to be fixed by the same Commission in the light of what can be accomplished by union, it is fairly safe to assume that the companies will find means of coming to terms. In both Britain and Canada the consolidation was in effect compulsory.

In another very important respect the plan differs from the British but agrees with the Canadian. It preserves competition in service. As tentatively worked out by the Interstate Commerce Commission, there are to be five competing systems between New York and Chicago or St. Louis, five between Chicago or St. Louis and the Pacific Coast, four between Chicago or St. Paul and the Gulf. It is difficult for either an American or a Cana-

5. See Report of Interstate Commerce Commission No. 12964, on Consolidation of Railroads. August 3, 1921.

dian to understand how the British expect to get good service without competition, and two or three systems in every section of the country would seem to be the ideal plan. It surprises a Canadian that the American plan does not contemplate transcontinental roads. With the standing example of the C. P. R. service it would seem to be wise policy to combine Eastern and Western roads and thus maintain competition in each part with effective transcontinental and overseas services.

In respect of rate-fixing the Act adopted a new and sound principle. It frankly recognized that, if railways are to secure the necessary capital, they must be able to offer investors reasonable certainty of a return sufficiently high to attract enough capital to meet their needs — a rate of return which may vary with money conditions. It therefore directed the Commission to establish rates which, at prevailing costs and under honest, economical and efficient management, would produce such fair return, and fixed that fair return for the first two years at 5½ per cent, with an optional additional half of one per cent for betterments. But this rate is to apply, not to each individual railway, but to the groups contemplated when the consolidations are effected. After consolidation the variation in earning capacity will not be so great; but care has been taken to see that the strongest roads do not reap too great profit, whether before or after, by a plan which is the most novel of any provision in the Act. If a railway earns more than 6 per cent, it must divide the surplus equally with the Government, and must retain its own half of the excess till a fund is built up sufficient to maintain the rate of dividend in lean years. No more radical provision has ever been enacted by Congress.

In still other respects the Act of 1920 is noteworthy. It attempted to establish a system of joint boards for the

adjustment of labor difficulties, with the Railway Labor Board as the final arbiter. It forbade the issue of securities without the consent of the Interstate Commerce Commission, and made provision for uniform systems of accounting. To realize the importance of these provisions, one must remember that since 1913 the Commission has been engaged on a most detailed examination and valuation of every item of the property of every railway in the country. Great as the difficulties in determining the true value of a railway are, the Commission must arrive at some conclusion. In the end, a valuation will be finally determined, and thereafter these provisions will ensure to the Commission the fullest knowledge of all stock transactions; thus it will be possible to secure a stability of railway shares and dividends, which is now quite impossible.

IV. The Significance of the Changes

In the light of this sketch of the altered conditons and new principles of legislation, let us consider the significance of the changes thus made in the three great English-speaking countries.

The most striking change is the elimination, or at least restriction, of competition. The old ideal of free competition, as at once the stimulant of enterprise and the protection of the public from extortionate charges, has been given up. In Great Britain the elimination is almost complete in service as well as in rates. In Canada there is complete elimination as to rates but not as to service, and the country stands back of the weaker competitor. Practically every railway of importance is absorbed in either one or other of the two systems. In the United States Congress has recognized that uniform rates do not mean the same thing to the strong as to the

weak roads and do not secure real competition, and therefore has set its course toward securing such an amalgamation of the roads as will equalize the competitive strength of large systems and thus, as far as possible sible, eliminate competition in rates. For many parts of the country the proposed plans mean the end of competition, and in certain sections, such as New England and Michigan, it is proposed to create zones on the European plan. There will still be a keen competition among the consolidated systems, but it will be a strictly regulated and limited competition in place of the old ideal of unrestricted competition.

In the next place, it is to be noted that it is the declared purpose of the Transportation Act so to regulate rates that a substantially uniform rate of dividend may be earned on the true value of the railway investment. It will take time to ascertain and adjudicate upon the many problems which arise in fixing such true value and to bring about the consolidations; but good progress is being made, considering the immensity of the problem. In a few years the new bases will be determined, and the Interstate Commerce Commission will be in a position to regulate rates with a precision not now possible. The control of the issue of all future securities makes possible the continuous ascertainment of the earnings once the starting-point base is fixed.

In Britain this problem is already in large measure solved. The Act of 1921 directs the Rates Tribunal to fix such rates as will enable the grouped railway systems to earn a return equal to that earned in 1913, and as this is easily capable of ascertainment, there remain only minor problems to work out. In Canada no such solution is at present possible because of the great disparity in the strength of the two main roads.

But returns on capital which are virtually fixed by the

power that regulates rates are not far short of guaranties, and companies which enjoy such returns stand in a totally different position from that of ordinary commercial undertakings free to make what profits they can and suffer their own losses.

The inevitable result is the limitation of profits, either through direct recapture by the law or through a revision of rates from time to time which will eliminate profits as distinct from interest on stocks as well as bonds. With profits as such thus either eliminated or kept within narrow bounds, the whole relation of railway operation to other businesses is completely altered. In effect, the railways become service corporations carrying on business at cost with proper allowances; in other words, they are on salary. This is the basis on which all the rapidly widening functions of government are carried on; and the stimulus to effort is not profit but the satisfaction of work well done and the lure of promotion. Have our countries by these acts started on a course of which the only logical end is the placing of the railways on the same footing as if nationalized, even tho the ownership and control remain in private hands?

Important as such changes would be, there is implicit in the altered relations a change of still greater importance. Since railway companies were first formed, it has been the universal practice to vest full control of the company's affairs in the hands of directors selected solely by the shareholders. Even tho the bondholders have more money invested in the enterprise than the shareholders — and in the United States the total of bonds is nearly double the total of stock — yet these bondholders have ordinarily no voice whatever in the control of the business. Neither have the thousands of employees whose whole lives are in most instances spent in the serice of the company, or even the executive officers as

such, tho on their skill more than any other factor depends the success of the whole enterprise. And up to the present time there has been a sound reason at the bottom of this practice, for it is the capital of the shareholders which is primarily at stake. The failure of the road may mean loss to the bondholders, but only after the whole margin of the capital has been wiped out. To the officers and employees it may mean temporary loss, but their skill and experience, which is their capital, remain while the capital of the shareholder has gone forever.

In the light of the developments just sketched, is not the whole basis changed? If the law recognizes the right of the owner of capital invested in railways to a return which, while not guaranteed, is virtually fixed by the regulation of rates and will tend to become a definitely fixed rate of dividend, has not the whole basis of the right of the stockholders to control the enterprise disappeared? In what essential respect would the position of the stockholders differ from that of the holders of junior bonds? Their capital would no longer be at risk in any of the older railroads. At most there would be fluctuations in the net earnings, but the amount of these earnings would depend, not on anything the shareholders could do or any risk they would run, but on the efficiency of the executive officers and the loyalty of the general body of employees. Yet neither of these classes has by right any voice whatever in the control of the system. Is it not clear that the stabilization of railway earnings must lead to a sharing in large measure of the control with the bondholders, the officers and the employees? It is significant that nearly every one of the plans submitted to the United States Senate provided for employee representation on the directorates, and the British Government was prepared to concede the right had not the trade-unions preferred more immediate ad-

vantages. The practice of electing the chief executive officers to the board by the grace of the shareholders is very general. It would not be a long step to the recognition of the principle that these officers should be there by right of their position, or as the elected representatives of their associates in the management. The shareholders and bondholders would always have a right to share in the general control, and special rights which would enable them to make sure that the property was being maintained and their security preserved, and the dividends permitted by the rates tribunal paid. But the rights of stockholders would not extend beyond those of bondholders, for the dividends paid would be much more in the nature of interest than of profits. Obviously, excess earnings above the rate contemplated when the scale of rates was fixed would belong, not to the shareholders, but either to the officers and employees who had made the surplus, or to the public in reduced rates. It would be in the interest of everybody that out of such surpluses there should first be built up a contingent fund, which would take care of the lean years and secure the payment of regular dividends, which in itself would help to lower the cost of additional capital.

But the security of the return to capital carries with it logically still further changes. At the present time railroad corporations are exposed to continual fire from two sides — from the employees demanding increased wages and from the shippers and producers demanding decreased rates. The basis of both attacks is the same — the belief that the corporations are making excessive profits. Now if the rate of dividend is definitely limited at a point determined by an independent tribunal, or perhaps by Parliament or Congress, and if the capital value on which this rate is to be computed has been ascertained by judicial means under legislative sanction,

the whole question of excessive profits is disposed of, and the basis of all anti-railroad agitation has been taken away. No longer can the railroads be considered the enemies of the people. Instead, they have become their agents, carrying out great enterprises in the public interest on terms of remuneration fixed by the people. Capital and Labor will perforce lie down together, since their interests will no longer disagree. With fixity of return would undoubtedly come investment in railway shares by hundreds of thousands, perhaps millions of small holders, probably including large numbers of employees themselves. If that tendency developed in the United States to the extent to which it already has developed in Britain it would mean something like four million holders of railway shares, more than half of whom would be small holders of less than $2400 worth of stock. Industrial war in the railway field would become impossible under such conditions.

It will take time to work out these solutions. Particularly in the United States, where the problems are so much larger and more complicated, there will be many difficulties and much opposition. It will take time to settle the valuations and the terms of consolidation, and there will doubtless be many legal battles. But time is a minor consideration once the people are on the right track. Some of the leaders in the railway world have shown a far-sighted grasp of the national problems involved and, if their spirit prevails, American efficiency will find solutions. In Great Britain twenty-five out of the twenty-six constituent companies had agreed upon terms of amalgamation before the date fixed for the coming into effect of the compulsory provisions of the Act. For the recalcitrant, the power of rate-fixing on the basis of the Commission's valuations will prove effective for the weaker companies, and the weapon of recap-

ture of excess profits will bring the stronger ones to see the light. The results will be well worth a determined struggle. To have the railways of all these countries placed on the basis of services, operated by private capital contributed by large numbers of citizens, including employees, with all the element of profiteering ruled out, with competition in efficiency only, with the interests of the companies concurrent with those of the country, with coöperation substituted for controversy, the whole country could settle down to the work of development with new life and confidence. In the service basis for all public utilities will be found the sound middle course between predatory Individualism and Socialism.

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THE THEORY OF INTERNATIONAL VALUES RE-EXAMINED

SUMMARY

The classical theorists on international values guilty of an over-abstraction which led them into error. — Mill's exposition turns on an exceptional rather than a normal case, 56. — Bastable errs in the presentation of this exceptional case, 59. — Both lay down corollaries some of which are true only in exceptional circumstances and others not true at all, 59. — The logic of exports and imports, 63. — Trading situations involving several countries and commodities; conclusions alien to currently accepted theory, 70. — Conclusion, in a series of negative and positive propositions, 83.

No part, perhaps, of John Stuart Mill's synthesis of the political economy of his time has come through the succeeding three quarters of a century of criticism with fewer scars than mark his theory of international values. This, Mill's outstanding original contribution to economic science, has shown itself at least as robust as any of the ideas he adopted from his predecessors. Professor Edgeworth, writing in 1894,[1] repeatedly speaks of Mill's chapters on the subject as "stupendous," and Bastable's standard work on the *Theory of International Trade* is an express "attempt to restate, in a more complete form, the doctrines of the classical English school," [2] that is to say, so far as international values are concerned, the doctrines laid down by Mill. In spite of the weight of sanction, both express and implied, which it has thus commanded, the classical theory of international values seems to the present writer to be open to grave objections, objections which, while they do not subvert its

1. Economic Journal, vol. iv, pp. 35, 424, 606.
2. Preface to First Edition.

foundations, nevertheless call for a substantial modification of its conclusions.

The reader will recall that Mill, "for the sake of simplicity," restricts his initial consideration to trade between two countries only and in but two commodities, and supposes that these commodities are capable of being produced in any quantity at constant effort cost,[3] and of being transported without any cost whatever. This paper will attempt to show that this is an over-abstraction which, far from clarifying the actual situation, in reality obscures it, and that it has led Mill and his followers to quite unjustifiable conclusions upon the nature of international trade. It will indeed be no part of our present purpose to question the assumptions of constant cost of production or of costless transportation. The danger of generalizations from the former of these assumptions has already been pointed out in the present writer's article on "Some Aspects of Protection Further Considered," [4] while the effects of cost of transportation are not essentially different from those of the varying costs which are there examined. It is to the assumptions of trade between two countries only and in but two commodities that attention will here be drawn in an endeavor to show that to construct a theory of international values in this piecemeal way is a method so faulty as to have issued in wholly unwarranted inferences.

"Suppose," says Mill, "that 10 yards of broadcloth cost in England as much labor as 15 yards of linen, and in Germany as much as 20. . . . The problem is, what are the causes which determine the proportion in which the cloth of England and the linen of Germany will ex-

3. This is implicit in Mill's treatment. In Bastable's "restatement" it is express; see Theory of International Trade, p. 23.

4. Quarterly Journal of Economics, vol. xxxvii, p. 199.

change for each other?"[5] In his analysis of this situation Mill assumes a state of reciprocal demand which will bring about equilibrium on some terms of interchange well within the limits of 15 and 20 yards of linen for 10 yards of broadcloth, and this he regards as the typical case, tho he says:

> It is even possible to consider an extreme case, in which the whole of the advantage resulting from the interchange would be reaped by one party, the other country gaining nothing at all. There is no absurdity in the hypothesis, that, of some given commodity, a certain quantity is all that is wanted at any price; and that, when that quantity is obtained, no fall in the exchange value would induce other consumers to come forward, or those who are already supplied to take more. Let us suppose that this is the case in Germany with cloth.[6]

Mill then shows that the English demand for linen might be so strong as to force up the price of linen to 10 yards of cloth for 15 of linen, in which case Germany would gain the whole of the advantage arising from the trade and England would be exactly as she was before the trade commenced.

So far from this being an extreme and barely conceivable case, logic will compel the conclusion that on Mill's assumptions it is the normal one. As a condition precedent to the conclusion that one of the countries will obtain the whole of the gain from the trade and the other none of it, it is by no means necessary to assume an absolutely inelastic demand for one or the other of the commodities concerned. All that is necessary is that the total consumption by either of the countries of that commodity in which it is at a comparative disadvantage shall, on any terms of exchange within the limits set by comparative cost, be incapable of an equilibration in value with its export of the commodity in which it is

5. Principles of Political Economy, Bk. III, chap. xviii.

6. Loc. cit.

comparatively efficient. This will happen whenever a large country trades with a small one in commodities of approximately equal total value, or when two countries of approximately equal economic importance trade in commodities the total values of which show a considerable disparity. It will be noted that Mill selected for his exposition countries of approximately equal size, and commodities (in his illustration at least) of approximately equal total values. Let us see what would happen (1) if, instead of England and Germany, he had supposed trade between England and Denmark in cloth and linen, and (2) if, instead of cloth and linen, he had supposed trade between England and Germany in cloth and, let us say, matches, assuming in the one case that the commodities are of approximately equal economic importance while the countries are not, and, in the other, that the countries are, while the commodities are not.

Taking the first case and paraphrasing exactly Mill's assumptions, with the substitution of Denmark for Germany, let us suppose that trade is initiated at the exchange rate of 10 yards of cloth for 17 of linen. Such a trade must cause a rapid shifting of English production from linen to cloth, and of Danish production from cloth to linen, and, under the assumed conditions, nothing can stop this shifting until it has completely eliminated either the Danish production of cloth or the English production of linen. Since we are supposing that the total value of linen and cloth is in approximate equality, Denmark, as the smaller country, will be completely specialized in linen production while there are, perhaps, nine tenths of the English linen producers still left in that business, the specialization by the Danes being sufficient to drive only one tenth of the English linen producers into the making of cloth. In these circumstances the terms of interchange of cloth for linen must move to

the extreme most favorable to Denmark, that is to say, 10 cloth for 15 linen; for a supply of linen adequate to the English demand is not obtainable on any better terms, the terms which the English linen producers require if they are to continue their operations.

Let us go now to the second case, in which we shall suppose England and Germany, countries of approximately equal importance, to possess a comparative advantage in cloth and matches respectively, 10 yards of cloth exchanging for 15 crates of matches in England, and for 20 in Germany. The opening up of trade on the basis of 10 yards of cloth for 17 crates of matches will quickly put the English producers of matches out of that business and into the making of cloth. But the Germans will never be able to find in England a market for matches large enough to pay for their whole consumption of cloth, and they must therefore continue to produce cloth at home. Such a situation will mean that the terms of interchange of cloth for matches will move to the extreme most favorable to England, that is to say, 10 yards of cloth for 20 crates of matches; for a supply of cloth adequate to the German demand is not obtainable on any better terms, the terms which the German cloth producers require if they are to continue their operations.

On Mill's assumptions, then, the establishment in international trade of any stable equilibrium other than at one of the extremes of the possible terms of interchange is dependent upon the simultaneous elimination, in both the trading countries, of the industry of comparative disadvantage. The chance of this happening is negligible; this is the extreme, the barely conceivable case, not, as Mill alleged, the normal one; while that which he regarded as abnormal, namely that the terms of interchange should go to one or other of the points which

mark the limits of advantage, must (again on his assumptions) prove to be the reality, unless the dice are loaded by assuming trade in two commodities of approximately equal total consumption-value and between two countries of approximately equal economic importance.

Bastable, in his restatement of Mill, recognizes this difficulty so far as it applies to trade between a small and a large country,[7] and attempts to minimize its importance by declaring (without proof) that the competition of other nations would have a tendency to deprive the smaller country of this special advantage. In the end, however, he rather weakly concludes that "the probability is that a small country gains by opening up trade with a large one." This alleged probability will be critically considered presently. For the moment it is enough to assert that the conclusion is unjustifiable,[8] to list it as (1) the first of several questionable inferences to which Mill and his disciples are led by the nature of their exposition of international trade doctrine, and to note, in addition, others as follows:

(2) That the richest countries, *ceteris paribus*, gain the least by a given amount of foreign commerce: since, having a greater demand for commodities generally, they are likely to have a greater demand for foreign commodities, and thus modify the terms of interchange to their own disadvantage.[9] Much depends here upon the content of the phrase *ceteris paribus*; but at any rate it will be demonstrated that the wealth of a country has no direct bearing on the percentage gains it may realize from international trade.

(3) That, but for cost of carriage, every commodity

7. Theory of International Trade, 4th ed., p. 43.

8. Except in the case of a single very small country trading with a large one and subject to no competition in the sale of its exports in the large country's markets. This may be what is meant, but it has little applicability to actual conditions.

9. Mill's Principles, Bk. III, chap. xvii, § 8.

would (if trade be supposed free) be regularly imported or regularly exported; and that a country would make nothing for itself that it did not also make for other countries.[1] Bastable, it is true, questions this statement, but on the ground of varying costs of production within the country. So far as Bastable's treatment of the subject goes, it would, however, be a perfectly valid inference from Mill's implied, and Bastable's express, assumption of constant costs. But it will be later shown that, even on the assumption of constant costs, it is erroneous.

(4) That the more varieties of goods a country can offer for export, the better is its position in trade.[2] It will be pointed out, in due course, that the variety of a country's exports is not a cause but an effect of the terms of interchange, and that those terms are more likely to be unfavorable to a country with a wide variety of exports than to one whose exports are few in number.

It will be convenient to deal with these inferences in reverse order and for the moment to hold to the assumption of trade between two countries only, but in several commodities. We shall be using familiar terms if we take Bastable's assumptions[3] that:

Country A with one unit of productive power can produce	and	Country B with one unit of productive power can produce
$10x$		$10x$
or		*or*
$20y$		$15y$
or		*or*
$100z$		$90z$

It will be recalled that the commodity z is introduced by Bastable *after* trade between A and B has been established on the basis of $10x$ for $16y$. "B is now able," says Bastable, "to offer to A not x only, but also z, and it will

1. Mill's Principles Bk. III, chap. xviii, § 3.

2. This is not specifically stated in Mill, tho it is implicit in his treatment, and Professor H. G. Brown in his Principles of Commerce, Part II, chap. ii, p. 26, cites Mill as his authority for the statement as given above.

3. Theory of International Trade, p. 36.

be to A's interest to take some of the commodity z at $17y = 90z$, as there would be a gain of $5z$ by the transaction, since, in A, $1y = 5z \therefore 17y = 85z$. . . . B's position as a trader will be improved." [4] All of this is sound enough if we admit the logic of the method of introducing commodities one by one. But taking the three commodities together at the start as part of a single trading situation, it is clear that z could be an export of either A or B according to the terms of interchange of x and y. With the terms $10x$ for $16y$, B can export z to A, as Bastable points out; but with the terms $10x$ for $19y$, A can export z to B, for A can produce $95z$ as easily as $19y$ and it will be to B's interest to take anything above $90z$ for $10x$. At anything less than $18y$ for $10x$, B can export z in addition to x; at anything more than $18y$ for $10x$, A can export z in addition to y. In other words, the comparative advantage in z shifts from one country to the other according to the shifting in the terms on which x and y are exchanged; and this may be generalized in the assertion that any commodity, except those two which mark the limits of the greatest difference in productive power between the exchanging nations, are potential exports (or imports) of either.

This will be clearer if, with Bastable, we take into consideration a fourth commodity, w, relative productive powers being assumed to be:

In A	*In B*
$10x$	$10x$
$20y$	$15y$
$100z$	$90z$
$50w$	$40w$

"Here," says Bastable, "if the ratios of exchange be, as would follow from the last case, $10x = 17y = 90z$, it will be A's interest to offer $45w$ for $10x$, since it thus gains $5w$; it is, too, for B's advantage to accept these terms, as

4. Theory of International Trade, p. 36.

it will also gain a similar amount." [5] The fact is, however, that if A can get $10x$ for $17y$, it will *not* be to its interest to offer $45w$, which in A is the equivalent of $18y$, as it would be better to continue to offer y.[6] A would, however, instead of $17y$, be willing to give up to $42\frac{1}{2}w$ in exchange for $10x$, and anything over $40w$ would be acceptable to B. B might, on the other hand, use w for export if the terms of interchange of x and z for y should fall below $16y = 10x$ or $90z$. B could then give something more than $40w$ for $16y$, and this would be acceptable to A, where $16y$ is equivalent to $40w$. The export of w, then, is not to be regarded as a resource peculiar to A, nor z as one peculiar to B. The fact is that y is an inevitable export of A and x an inevitable export of B, because these are the commodities which mark the limits of the greatest difference in productive power between A and B; or, to put it more familiarly, y is the commodity in the production of which A has a comparative advantage as against all other commodities, and x the commodity in which B has. But w and z may be exports of either A or B according as the terms of interchange of x and y move one way or the other. For, according to the assumed conditions:

For 15 y, B will give a maximum of $10x$, $90z$, or $40w$, while for 15 y, A will take a minimum of $7\frac{1}{2}x$, $75z$, or ~~$72\frac{1}{2}w$~~. 37½

x, z, and w are therefore all potential exports of B and potential imports of A.

On the other hand: 20Y

For $10x$, A will give a maximum of $20y$, $100z$, or $50w$, while for $10x$, B will take a minimum of $15y$, $90z$, or $40w$.

y, z, and w are therefore all potential exports of A and potential imports of B.

5. Theory of International Trade, p. 36.

6. To offer $45w$ would, moreover, controvert Bastable's assertion (Theory of International Trade, p. 23) that, in the premises laid down, commodities produced in either country will exchange in that country on the basis of cost of production. A will presumably not sell w abroad on any different terms than at home; but, if Bastable's statement is correct, $17y$ would exchange for $45w$, which is not in accord with their costs of production in A.

Similarly it could be shown that every commodity but one is a potential export from any given country,[7] every movement of the terms of interchange increasing the number of commodities capable of export by the country to which the movement is unfavorable and diminishing the number capable of export by the country to which the movement is favorable. The fact that a country is able to offer a wide variety of goods for export raises, therefore, no presumption whatever that the terms of interchange will be favorable to that country, but rather leads to the conclusion that they *have* been unfavorable; such a situation is, in short, not a cause of favorable but an effect of unfavorable terms of interchange.[8]

This transfer of exports from one to the other of two trading countries furnishes the check to the movement of the rates of interchange against a country for whose original exports the foreign country's demand shows an elasticity of less than unity, since it automatically diminishes the number, and therefore the total value, of the foreign country's exports, and increases that of the home country's. For this situation of a demand of less than unitary elasticity, the classical economists furnish no solution. They merely dismiss it as improbable, tho everyday facts show that it would be by no means out of the question in the premises they themselves set up.

From the statement thus far made it will be clear that, under the assumed conditions, so long as a country imports more than one commodity (or exports a variety of

7. Cost of transport, it will be remembered, is abstracted.

8. It may of course happen that a country, A, has a great number of goods in the production of which its comparative advantage is but little less than in that commodity in which its comparative advantage is greatest; and as each commodity, as it becomes available for export, will, in the assumed conditions, represent a transfer from the export list of the foreign country to that of A, the movement of the terms of interchange against A, which is due to A's excess of demand for imports over the foreign country's demand for exports, cannot proceed very far until it is checked by the advent of equilibrium, in which case the terms of interchange will be fairly favorable to A. But when a country shows a wide variety of exports there is no reason to suppose that this, rather than its opposite, is the case.

commodities at least two less in number than it consumes), it must obtain some share of the gains arising from its international trade,[9] for the terms of interchange could move still further against it until the penultimate import was supplanted by home production, and even then it would be deriving some slight advantage from the remaining import. It is well-nigh impossible that a country should, with trade free, fail to import more than one commodity; and the true reason for Mill's statement that it is barely conceivable that one of two trading countries should obtain all the advantages of the trade between them and the other no advantage at all (except so much as would be requisite to provoke the demand for imports as against the domestic production of the commodities of comparative disadvantage) is that which is given above, not the quite untenable reason which Mill actually gives, that, to deprive a country of any gain from international trade, its demand for the imported goods must be absolutely inelastic. The truth of Mill's statement is, indeed, dependent upon the assumption of trade in more than two commodities and, as has been shown, cannot be demonstrated when exchange is confined to two commodities only.

The line dividing national comparative advantage and disadvantage is a moving line, its position at any moment being determined by the then present rate of interchange of international products. If we should arrange in a column the names of the commodities consumed by any given country, placing at the top and at the bottom, respectively, the two commodities in which that country showed the widest difference in productive power when compared with the foreign trading world in general, then, taking the commodity last on the list as a base,

9. Unless indeed in the highly improbable event that its comparative disadvantage in its several imports be identical each with the other.

and measuring in the same way, should set down in the order of diminishing difference in productive power all the commodities lying between the two originally selected, we should have a list in which that country would have a comparative advantage in the production of any commodity on the list over all the commodities which succeeded it, and a comparative disadvantage, therefore, with regard to all the commodities which preceded it. But the line dividing national comparative advantage and disadvantage might settle anywhere between the two extreme commodities, and would shift from time to time as the terms of exchange of international products moved in one direction or the other.[1] The logic of the situation is this: if trade be opened up between two countries which at the start trade only with each other and exchange but two commodities, those commodities would presumably be the two at the extremes of the lists prepared as above (for the list of one country needs only to be reversed to provide that of the other); and if the amount and intensity of demand of country A for the goods it was importing should cause A to require a greater value of import than B, A must offer better terms, and will continue to do so, if necessary, until some other commodity presents as good an opportunity of profit on export by A as did the original commodity. This second commodity will then be exported along with the first. If both together are inadequate to meet the value of the import which A requires from B, they will both be offered on better terms (the price of both falling together so as to keep a constant ratio to cost of production), until some third commodity becomes available for export, and so on until a balance of values is achieved.[2]

1. See on this point Marshall, Money, Credit and Commerce, Appendix H.

2. This principle has some application to a protective policy. Protection is usually invoked to cover commodities which, in the list of goods consumed, would be not far below the line of comparative advantage at the moment. Such protection cuts down on

Tho the foregoing is the logic of the situation, in actual fact several commodities would probably be exported and imported by both countries immediately on the opening up of trade, and the commodities in which the respective countries possessed the greatest comparative advantage would be exported in increasing volume by both countries, until their price fell so far in the importing country as to leave no greater profit than would be realized on the exports in which productive comparative advantage was not so great. Since this adjustment is a matter, not of *inter-* but of *intra*-national competition, the classical economists are, on their own premises, bound to assume that the prices of all exported goods, measured in any commodity not imported, will ultimately correspond to cost of production (tho, as we have seen, Bastable here falls into a contradiction); and, since constant cost is assumed, the prices of exports must preserve the same relation to each other after, as before, international trade is opened up. It is in the prices of imports that the gain will make itself manifest.

The inevitable conclusion is that the export of second, third, and later commodities is forced upon a country by the volume and intensity of its demand for imports, and that, as this process develops, its gains per unit diminish from those which are realized on its product of greatest comparative advantage to those realized on its second, third, and later commodities of inferior comparative advantage, the diminution in gain being spread over the whole trade and not merely over that

those imports which, of all the goods imported, cost least to make at home, and it also cuts down on the exports, which, of all the goods exported, cost most to make at home. The result is to secure those goods as imports which would cost a very great deal more to produce at home than to import, and to secure them with exports which cost less per unit of import than before the protection. The *ratio* of gain from international trade will thus tend to increase, the total gain may or may not. This is simply another form of the old doctrine that duties may change the terms of interchange of goods in favor of the levying country, tho it is more applicable, as the old doctrine was not, to protective than to revenue duties.

part of it most recently entered upon. The greatest ratio of gain from international trade will probably therefore be obtained by the country which can secure all its imports by the export of one commodity only, for this commodity will be that which the given country can produce with the greatest comparative ease. The more commodities exported, the further must one go down the gamut of comparative advantage, and the smaller will be the difference between the cost of exported goods and the cost which would be necessary to produce at home the imported commodities which are obtained in exchange for them. This conclusion is sufficiently attested by experience. Chile with nitrates, East India with rubber, Cuba with sugar, procure the bulk of their respective imports. Surely it will not be denied that recourse to other exports on the part of any of these countries (technological conditions remaining unchanged) would mean that the gains from their principal export had declined so far that it had become as profitable to export other things as to export the original staple, and that the latter condition of these countries would then be worse than the former. This was shown clearly enough during the late war by Brazil, when its market for coffee was suddenly, in large part, swept away. In her distress Brazil developed a considerable variety of exports which she had not sent out in the period of her prosperity; but no one supposes that this situation was an improvement on the former status of that country.

So much for the doctrine that a wide variety of exports makes for favorable terms of exchange. Let us now proceed to an examination of the statements that, but for cost of carriage, every commodity would be regularly imported or exported, no country making any-

thing for itself that it did not also make for other countries; that the richest countries gain the least from a given amount of foreign commerce; and that small countries gain the larger share of trade with large ones.

Instead of taking, as above, two countries and four commodities, let us take four countries and two commodities, the countries A, B, C, and D being in economic importance in the ratio 1 : 2 : 3 : 4. Suppose that for one unit of productive power (not necessarily identical in the several countries) there can be produced:

In A	*In B*	*In C*	*In D*
10 cloth	10 cloth	10 cloth	10 cloth
or	*or*	*or*	*or*
15 linen	21 linen	30 linen	18 linen

Suppose A offers 10 cloth for 16 linen. B, C, and D will all want to sell linen for cloth on these terms, and as all are larger than A, the price of cloth must move in A's favor. How far will it move? Let us try 10 cloth for 18 linen. At this rate of interchange D will have no interest in buying or selling abroad, but B and C will still want to exchange linen for A's cloth, and as both are larger than A, the terms of interchange must, from A's point of view, continue to improve. But as soon as they go beyond 18 linen for 10 cloth, D joins A as an importer of linen and an exporter of cloth. A and D together represent a productive and consuming capacity approximately equal to B and C, and this is therefore a situation which promises stability. Further, if the price of cloth in linen should rise to 10 cloth = 21 linen, B will drop out as an importer of cloth and exporter of linen, leaving C alone in that capacity, while both A and D will still be importers of linen and exporters of cloth. Their combined productive and consuming capacity being greater than C's, their competition must drive the price of cloth down to something less than 21 linen for 10 cloth, when

B will again enter the field as a buyer of cloth and seller of linen. The range within which the terms of interchange of cloth for linen must fall is therefore 10 cloth = 18 to 21 linen, the play of reciprocal demand fixing the exact terms within those limits. Let us suppose the terms to settle at 10 cloth = 19.5 linen. At this price C, the second largest country, makes the greatest gain, since it can produce 30 linen as easily as 10 cloth and has to give but 19.5 of them to secure 10 cloth. A, the smallest country, makes the next largest gain, as it obtains 19.5 linen for 10 cloth, whereas it could itself produce but 15. B and D, respectively the next to the smallest and the largest countries, make an equal small gain. There is here shown no tendency for small countries to secure a paradoxical lion's share of the gains from trade with larger ones. What actually happens is that the play of international competition fixes a fairly narrow range within which the terms of interchange of traded commodities must move, and that the greatest gains from international trade are secured by those countries in which the rate of interchange of the commodities concerned would, in the absence of international trade, be farthest away from the rate actually established, while the smallest gains are secured by those countries in which the rate of interchange of the commodities concerned would, without international trade, approximate that which is actually established when that trade is carried on.

This point will be brought out more clearly, and other points will be established, if a third commodity be introduced, when we shall be dealing with a situation which approximates actual conditions and avoids the errors arising from the artificiality of the method employed by the classical economists, which failed to take into account competition among countries, or the possibility of

one country taking up the production and export of more than one commodity.

Let us suppose, then, four countries, A, B, C, and D, trading in three commodities, cloth, linen, and chairs. Let it be assumed that before international trade is opened up, each country devotes one third of its resources to each of the three products, and that each increases its consumption of the three products proportionately, as it secures gains from international trade. Let the productive power of the four countries, measured in cloth, be in the ratio 1 : 2 : 3 : 4. Let one unit of productive power yield:

In A	*In B*	*In C*	*In D*
10 cloth	10 cloth	10 cloth	10 cloth
or	*or*	*or*	*or*
19 linen	20 linen	15 linen	28 linen
or	*or*	*or*	*or*
42 chairs	24 chairs	30 chairs	40 chairs

and let it be assumed that, on a non-specialized basis without international trade, there would be produced in a given time:

In A	*In B*	*In C*	*In D*
10,000 cl. (10)	20,000 cl. (10)	30,000 cl. (10)	40,000 cl. (10)
19,000 l. (19)	40,000 l. (20)	45,000 l. (15)	112,000 l. (28)
42,000 ch. (42)	48,000 ch. (24)	90,000 ch. (30)	160,000 ch. (40)

What will be the terms of interchange under international trade? Let us try 10 cloth = 19 linen = 42 chairs. At this rate of interchange B, C, and D will all want to buy chairs with cloth or linen, while A will find no motive in trade. The price of chairs must rise rapidly. Suppose it rises to the point where the terms of interchange of products are 10 cloth = 19 linen = 30 chairs. At these prices A will specialize on chairs, B on linen, C on cloth and chairs, and D on linen (since on these terms D has a greater advantage in linen than in chairs).

With B and D specializing on linen the price of that commodity must fall, since their total production would be $3 \times 40{,}000$ plus $3 \times 112{,}000 = 456{,}000$ linen,[3] an amount far in excess of the total requirement of linen by all four countries, on the assumption that each country expands its demand for linen in proportion to its gains from trade. How far will the price of linen fall? Suppose it falls to 10 cloth = 22 linen = 30 chairs.[4] At these prices A will specialize on chairs, B on cloth, C on cloth and chairs, and D on chairs (for at these new prices D has a greater advantage in chairs than in linen). Under these circumstances the supply of linen will rapidly decline, since no country finds its comparative advantage in that line. On the terms 10 cloth = 19 linen = 30 chairs, then, too much linen tends to be produced, while on the terms 10 cloth = 22 linen = 30 chairs, there is no tendency to produce linen at all. When, in other words, D specializes in linen, the price of linen falls; but when, as a result of that fall, D specializes in chairs, the supply of linen tends to fall off to zero, since B as a result of the same fall in price tends to go in for the production of cloth rather than linen. The price of linen will therefore move upward from the 10 : 22 : 30 ratio. No stability can be reached while D specializes exclusively in either linen or chairs, and the only solution is to have D produce both of these commodities. The terms of exchange which will accomplish this are 10 cloth = 21 linen = 30 chairs; for on those terms D has an equal comparative advantage in linen and chairs and will therefore do as well in one as in the other. The ratio of 21 linen to 30 chairs (7 linen to 10 chairs), which gives D an equal com-

3. Without specialization equal resources are devoted to each of the three products. With specialization each country can therefore produce three times its production of any one commodity under the non-specialized régime.

4. It will be well in indicating price changes to keep 10 cloth as a constant base, and to show a rise or fall in cloth relative to linen or chairs, and of linen and chairs relative to each other, by changing the number of linen or chairs offered for 10 yards of cloth.

parative advantage in both linen and chairs, could of course be preserved with an exchange rate for each against cloth very different from that here laid down, but, with any other than the terms 10 cloth = 30 chairs, C, a large country, would specialize in either cloth or chairs exclusively, according as one or the other sold on better terms, and, along with A's chairs or B's cloth, would flood the market with its specialty and would force a readjustment in price. 10 cloth must therefore exchange for 30 chairs, and 21 linen must exchange for 30 chairs. The rate of interchange 10 cloth = 21 linen = 30 chairs is consequently the only rate which will show any stability, and it is stable because, under it, both C and D, the two large countries of the four, tend to diffuse their productive resources rather than concentrate them upon a single product and thus to keep a balance of production which is impossible when they devote their efforts to the production of but one commodity.[5]

But it must not be supposed that C and D will divide their productive resources equally between the two products they manufacture, tho in a non-specialized régime they would have done so. How much of each they will produce, when stabilized conditions are attained, will depend upon the preceding play of prices, which will have encouraged a greater production in one line than in the other, according to the relative supplies which were forthcoming from other centers of production. If we

5. For it must be remembered that, under the assumed conditions, specialization upon one product enables the specializing country to turn out three times its original production of the product in which it possesses a comparative advantage. If the country is relatively large, this may be more than enough to supply the whole market. Thus if we denote the productive capacity of the four countries in their commodities of comparative advantage by the figures 1 : 2: 3 : 4 and suppose a concentration by the largest country on one commodity, its production of that commodity would be represented by 12, and this would probably exceed the total demand of all four countries for that product in spite of the increase in demand which would arise from the improvement in conditions effected by trade. For the original total consumption would be something less than 1 + 2 + 3 + 4, that is, 10, and the present production is 12.

take the figures of production on a non-specialized basis as given on page 70, and suppose that, after international trade is opened up, the gains which each country derives from that trade are spent so as to keep the same proportionate consumption of each of the commodities as prevailed under the non-specialized régime, it is possible to determine with a high degree of exactness just what the trade would be.

We have seen that the terms of interchange will be 10 cloth = 21 linen = 30 chairs, and that on these terms A will produce chairs, B cloth, C cloth and chairs, and D linen and chairs.[6] When A specializes exclusively in chairs it can produce in the given period 126,000 chairs (3 × 42,000). To preserve the original proportions in A's consumption of cloth, linen, and chairs (viz., 10 : 19 : 42), A will retain 53,370 of these chairs, and will export 72,630 in exchange for 12,710 yards of cloth and 24,150[7] yards of linen.

When B specializes exclusively in cloth, it can produce in the given period 60,000 yards of cloth (3 × 20,000). To preserve the original proportions in B's consumption of cloth, linen, and chairs (viz., 10 : 20 : 24) B will retain 21,800 yards of cloth, and export 38,200 yards in exchange for 43,596 yards of linen and 52,320 chairs.

6. This exposition will be followed more easily if reference is made as required to the table on page 76.

7. It will be found that the margin of error in these and the following proportions is not more than one in four thousand. It would be easy to make them much closer than this, but it would involve the use of long and clumsy decimals and it seemed better to deal in round numbers.

The method adopted for obtaining the desired proportions is as follows. Take the proportions in country A — 10 : 19 : 42. At the rate of interchange finally established

10 cloth = 30 chairs
19 linen = 27$\frac{1}{7}$ "
42 chairs = 42 "

10 cloth plus 19 linen plus 42 chairs = 99$\frac{1}{7}$ chairs.

But by concentrating on the production of chairs, country A, for the same effort that will yield 10 cloth plus 19 linen plus 42 chairs, can produce 126 chairs. The consumption in A of the respective commodities under a trading régime will therefore be to the consumption under the non-trading régime in the proportion of 126 to 99$\frac{1}{7}$, since the productive efficiency of A is increased in that proportion.

C produces both cloth and chairs. If its whole productive power were concentrated on cloth, it could produce in the given period 90,000 yards of cloth (3 × 30,000); if on chairs, it could produce 270,000 chairs (3 × 90,000). Taking either as a base, it will be found that to preserve the original proportions in C's consumption of cloth, linen, and chairs (viz., 10 : 15 : 30), C must use 33,158 yards of cloth, 49,735 yards of linen, and 99,474 chairs. Now D is the only country producing linen. A, B, and C must all, therefore, obtain their linen from D. We know how much linen each will consume (24,150; 43,596; and 49,735 yards respectively), and therefore how much linen will be exported by D (117,481 yards). In the same manner as for C we may find that to preserve the original proportions in D's consumption of cloth, linen, and chairs (viz., 10 : 28 : 40), D must use its productive power to secure 43,636 yards of cloth, 122,182 yards of linen, and 174,548 chairs. Having the amount of linen exported by D (117,481 yards), and the amount consumed at home (122,182 yards), addition will give us the total production of linen in that country, viz., 239,663 yards. The rest of D's productive capacity, devoted to chairs, will yield 137,624 units of that product; but as D requires 174,548 for its own consumption, it must import, from A or C, 36,924 chairs. We have now obtained the figures of production in A, B, and D; C, it will be remembered, produces cloth and chairs. B is the only other country producing cloth. We know how much cloth B produces (60,000 yards), and how much B itself consumes (21,800 yards). Subtraction will then give us how much cloth B exports (38,200 yards). We know also how much cloth A and D import (12,710 and 43,636 yards respectively). This is greater than B's export by 18,146 yards, and this amount must therefore be obtained from C. Add this to C's own consumption

of cloth and we get C's production of that commodity, viz., 51,304 yards. The rest of C's productive capacity is devoted to chairs, of which it will produce 116,088. Its own consumption of chairs is 99,474 and it thus has for export 16,614. These together with A's export of 72,-630 chairs will just be adequate to meet the demand of B and D.

The table on the following page will show the whole situation clearly.

The data from which this trading situation was developed were random selections, and similar results would have been achieved with practically any figures one might take. Yet the results are quite at variance with the conclusions on international trade which have been drawn by Mill and his followers. Thus, tho Mill claimed that, under the conditions we have assumed, no country would make anything for itself that it did not make for other countries, we find country D not only making chairs but importing them; moreover it is absolutely essential that D should do so if any stability is ever to be reached or retained in the trade between A, B, C, and D. For if D should at any time produce enough chairs for its own consumption, or even increase its production slightly, the supply of chairs from A must be sold at such low prices as to make it unprofitable for D to continue in that line; while if D should go out of chair manufacture altogether, or even diminish its production of that commodity slightly, and turn its productive powers to the making of linen, the increased supply of linen would so lower its price as to make it unprofitable for D to continue to manufacture linen. The play of prices will therefore cause D to produce both chairs and linen, chairs in a supply inadequate for D's own needs, linen in a supply sufficient for D's needs and for the needs of the other three countries as well. Similarly the

TABLE OF TRADE RELATIONS BETWEEN COUNTRIES A, B, C, AND D.

Terms of Interchange of Goods: 10 cloth = 21 linen = 30 chairs

	UNITS OF CLOTH				UNITS OF LINEN				UNITS OF CHAIRS			
	Produces	Exports	Imports	Consumes	Produces	Exports	Imports	Consumes	Produces	Exports	Imports	Consumes
Country A Productive Capacity = 1	None	None	12,710	12,710 (10)*	None	None	24,150	24,150 (19)*	126,000	72,630	None	53,370 (42)*
Country B Productive Capacity = 2	60,000	38,200	None	21,800 (10)*	None	None	43,596	43,596 (20)*	None	None	52,320	52,320 (24)*
Country C Productive Capacity = 3	51,304	18,146	None	33,158 (10)*	None	None	49,735	49,735 (15)*	116,088	16,614	None	99,474 (30)*
Country D Productive Capacity = 4	None	None	43,636	43,636 (10)*	239,663	117,481	None	122,182 (28)*	137,624	None	36,924	174,548 (40)*
Totals (All Countries)	111,304	56,346	56,346	111,304	239,663	117,481	117,481	239,663	379,712	89,244	89,244	379,712

EXPLANATION OF EACH COUNTRY'S TRADE

A produces 126,000 chairs. It imports 12,710 cloth for which it must export 38,130 chairs, and it imports 24,150 linen for which it must export 34,500 chairs; a total export of 72,630 chairs.

B produces 60,000 cloth. It imports 43,596 linen for which it must export 20,760 cloth, and it imports 52,320 chairs for which it must export 17,440 cloth; a total export of 38,200 cloth.

EXPLANATION OF EACH COUNTRY'S TRADE

C produces 51,304 cloth and 116,088 chairs. It exports 18,146 cloth for which it obtains 38,106 linen, and it exports 16,614 chairs for which it obtains 11,629 linen; a total import of 49,735 linen.

D produces 239,663 linen and 137,624 chairs. It imports 43,636 cloth for which it must export 91,635 linen, and it imports 36,924 chairs for which it must export 25,846 linen; a total export of 117,481 linen.

Total exports and imports and total production and consumption of each article of course correspond.

* The figures in parentheses (read crosswise) represent the ratios in which the three commodities were consumed in the several countries before trade was opened up; a ratio of consumption which has been assumed to have remained constant after the development of trade.

play of prices will set C producing both cloth and chairs; but, unlike D, C will export both of these commodities in exchange for imported linen. There is no inherent reason why a country, in the premises laid down, might not produce exactly its own consumption of any or all commodities, and neither export nor import, tho the chances of this happening are extremely small.

Let us now consider the proposition that the richest countries gain the least from a given amount of foreign commerce. If we assume, as has not been necessary hitherto, that a unit of productive power is identical in all four countries, then the wealth (per capita) of A, B, C, and D, before the opening up of international trade, might reasonably be supposed to be in proportion to their general productive powers. If one unit of productive power (identical in the four countries) yields 10 cloth in each of them, then per capita wealth will depend upon the relative productivity of the several countries in the other commodities. Inspection will show that D will be the richest country, A second, B third, while C will be the poorest of them all. How do they share in the gains from international trade? These can be determined by comparing the consumption of any one of the three commodities in the several countries before and after international trade has been established. This is shown on pages 70 and 76. It will be found that the percentage gains from international trade are as follows: A, 27.1; B, 9.0; C, 10.53; D, 9.04. There is certainly no correlation here between poverty and large percentage gains from international trade. Ranged in order of poverty, the countries are C, B, A, D; ranged in order of percentage gains from international trade, they are A, C, D, B.[8]

8. It is interesting to note that the country with the highest percentage of foreign to domestic trade, gains the least from its foreign trade. B's foreign trade is a larger proportion of its total trade than is the case for any of the other countries, yet its gains (per cent) are the smallest of all. This is doubtless merely a coincidence, but it serves to refute a popular superstition.

As to the allegation that a small country tends to secure the larger share of the gains arising from international trade, it turns out that A, the smallest country, makes the highest percentage gain. This will presently be shown to be fortuitous, but meanwhile it is pertinent to point to the fact that B, the smallest country aside from A, makes the lowest percentage gain, while the large countries C and D are in an intermediate position.

That A's large gains are due merely to the special situation, and that a large share of the gains accruing to the smallest of several trading countries is not a constant result of international commerce, may be shown by taking new data. Suppose that a unit of productive power will produce:

In A	*In B*	*In C*	*In D*
10 cloth	10 cloth	10 cloth	10 cloth
or	*or*	*or*	*or*
27 linen	28 linen	15 linen	35 linen
or	*or*	*or*	*or*
30 chairs	24 chairs	27 chairs	40 chairs

and that in a given time there can be produced:

By A	*By B*	*By C*	*By D*
20,000 cloth	30,000 cloth	30,000 cloth	30,000 cloth
or	*or*	*or*	*or*
54,000 linen	84,000 linen	45,000 linen	105,000 linen
or	*or*	*or*	*or*
60,000 chairs	72,000 chairs	81,000 chairs	120,000 chairs

that is to say that B, C, and D are, in productive power (measured in cloth), all in the ratio of 3 : 2 to A. Experiment will show that the only terms of exchange which will give stability are 10 cloth = 27 linen = 30 chairs, or something very close to this ratio. Thus, if linen temporarily rises or falls above this ratio, a transfer of productive power into or out of the manufacture of linen will go on until equilibrium is restored, and the same is

true of chairs. This will be evident if we take figures just on one side or the other of the 10 : 27 : 30 ratio.

10 cloth = 26 linen = 30 chairs	10 cloth = 28 linen = 30 chairs	10 cloth = 27 linen = 29 chairs	10 cloth = 27 linen = 31 chairs
A will produce linen	A will produce cloth and chairs	A will produce chairs	A will produce cloth and linen
B will produce linen	B will produce cloth and linen	B will produce linen	B will produce linen
C will produce cloth	C will produce cloth	C will produce cloth	C will produce cloth
D will produce linen	D will produce chairs	D will produce chairs	D will produce linen
....	....	....	....
Linen must *fall* in price	Linen must *rise* in price	Chairs must *fall* in price	Chairs must *rise* in price

But with the rate of interchange 10 cloth = 27 linen = 30 chairs, B will produce linen, C cloth, D chairs, and A all three, and a stable condition of trade can be established. Working this trade out on the lines already indicated at a ratio of interchange of 10 cloth = 27 linen = 30 chairs, we shall find the situation shown on page 80.

Country A, the smallest country of the four, will, when equilibrium is reached, be receiving no gain at all from its international trade, the terms of interchange in the international market being precisely those which would prevail in A if it carried on no foreign trade. The classical economists would have said that in these circumstances A would do no foreign trading. But this is not so. *For so long as the terms of interchange of cloth, linen, and chairs show any deviation from the 10 : 27 : 30 ratio,* A will push the production and export of the commodity which that deviation favors, and this specialization will of necessity mean a *pro tanto* withdrawal from the production of some other commodity or commodities, and their consequent import. *But the terms*

Produces	Exports	Imports	Consumes	Would produce and consume under a non-specialized régime without international trade
COUNTRY A				
32,611 cloth	12,611 cloth (= 37,833 chairs)		20,000 cloth (10)*	20,000 cloth (10)*
64,806 linen	10,806 linen (= 12,007 chairs)		54,000 linen (27)*	54,000 linen (27)*
10,160 chairs	(= 49,840 chairs)	49,840 chairs	60,000 chairs (30)*	60,000 chairs (30)*
		No gain from international trade		
COUNTRY B				
252,000 linen		32,898 cloth (= 88,825 linen)	32,898 cloth (10)*	30,000 cloth (10)*
		78,956 chairs (= 71,060 linen)	92,115 linen (28)*	84,000 linen (28)*
	159,885 linen	(= 159,885 linen)	78,956 chairs (24)*	72,000 chairs (24)*
		9.66 % gain from international trade.		
COUNTRY C				
90,000 cloth		54,977 linen (= 20,362 cloth)	36,652 cloth (10)*	30,000 cloth (10)*
		98,959 chairs (= 32,986 cloth)	54,977 linen (15)*	45,000 linen (15)*
	53,348 cloth	(= 53,348 cloth)	98,959 chairs (27)*	81,000 chairs (27)*
		22.173 % gain from international trade.		
COUNTRY D				
360,000 chairs		33,061 cloth (= 99,183 chairs)	33,061 cloth (10)*	30,000 cloth (10)*
		115,714 linen (= 128,572 chairs)	115,714 linen (35)*	105,000 linen (35)*
	227,755 chairs	(= 227,755 chairs)	132,245 chairs (40)*	120,000 chairs (40)*
		10.203 % gain from international trade.		

* Figures in parentheses represent the ratio of consumption of the three commodities in each country, a ratio assumed to remain constant after the opening up of international trade.

of interchange will inevitably shift from the 10 : 27 : 30 ratio if A attempts to be self-sufficing; for D's productive power in chairs is so great as to make it impossible to sell that commodity on the 10 : 27 : 30 basis, if B and C are the only foreign markets available. In this situation the price of chairs must fall, and it will then pay A to import them, sending out cloth and linen in payment. But after the requisite number of chair producers in A have been driven into other lines by the fall in the price of chairs, the terms of interchange will tend to stabilize at the 10 : 27 : 30 ratio, leaving some chairmakers in A, but not enough fully to supply A's consumption of that commodity. If the withdrawal from chair production in A should be overdone, the price of chairs would rise, and a reverse movement would take place, leading to the establishment of the 10 : 27 : 30 ratio with A producing about one sixth of its consumption of chairs as indicated on page 80.

If A were a still smaller country, say one third instead of two thirds as large as B, C, and D (measured in the production of wool), all of A's producers of chairs would be driven out of business by D, before D's production could be absorbed on the 10 : 27 : 30 basis, and the terms of exchange must shift to a ratio which will enable D to produce some other commodity to as great advantage as chairs. Trial will show that this ratio will be 10 cloth = 27 linen = 30$\frac{6}{7}$ chairs. On these terms of interchange A will produce cloth and linen, B linen, C cloth, D chairs and linen, and the trade will then be carried on as shown on page 82.

From these examples it is clear that the alleged tendency of a small country to secure the greater portion of the gains arising from its trade with larger countries is without scientific foundation in a trading world which consists of many countries and deals in many commod-

Produces	Exports	Imports	Consumes	Would produce and consume in the absence of international trade
		Country A		
22,753 cloth		7,689 linen (= 2,848 cloth)	10,093 cloth (10)*	10,000 cloth (10)*
19,567 linen		30,280 chairs (= 9,812 cloth)	27,253 linen (27)*	27,000 linen (27)*
	12,660 cloth	(= 12,660 cloth)	30,280 chairs (30)*	30,000 chairs (30)*
		Gain from international trade 0.93 %.		
		Country B		
252,000 linen		33,158 cloth (= 89,526 linen)	33,158 cloth (10)*	30,000 cloth (10)*
		79,579 chairs (= 69,632 linen)	92,842 linen (28)*	84,000 linen (28)*
	159,158 linen	(= 159,158 linen)	79,579 chairs (24)*	72,000 chairs (24)*
		Gain from international trade 11.053 %.		
		Country C		
90,000 cloth		55,543 linen (= 20,572 cloth)	37,028 cloth (10)*	30,000 cloth (10)*
		99,977 chairs (= 32,400 cloth)	55,543 linen (15)*	45,000 linen (15)*
	52,972 cloth	(= 52,972 cloth)	99,977 chairs (27)*	81,000 chairs (27)*
		Gain from international trade 23.429 %.		
		Country D		
17,734 linen		32,474 cloth (= 100,206 chairs)	32,474 cloth (10)*	30,000 cloth (10)*
339,733 chairs		95,926 linen (= 109,630 chairs)	113,660 linen (35)*	105,000 linen (35)*
	209,836 chairs	(= 209,836 chairs)	129,897 chairs (40)*	120,000 chairs (40)*
		Gain from international trade 8.247 %.		

* See note on page 80.

ities. The scintilla of truth in the idea lies in the fact that a small country may be able to specialize exclusively on a single commodity in which it possesses a very great comparative advantage, and obtain all its imports through the export of this one commodity. But were this condition realized, it would run directly counter to another of the classical propositions, viz., that a variety of exports makes for favorable terms of interchange. We have seen rather that *un*favorable terms of interchange make for a variety of exports, and it is interesting to note that in the cases given above (tho this was not the point at issue), the countries with the greatest variety of exports are invariably in a relatively bad position so far as their percentage gain from international trade is concerned, and are usually in the position absolutely the worst.

In refutation of the doctrines of the classical school, — doctrines based upon an overabstraction the results of which cannot be imported into a more complex trading situation, — it has been shown that:

(1) International trade may be carried on by a country which obtains no advantage whatever therefrom, the play of prices forcing a distribution of productive powers which will result in such a country producing more than its own demand for some commodities and less than its own demand for others.

(2) A great variety of exports is not a cause of favorable, but an effect of unfavorable, terms of interchange of the products of any given country for those of other countries.

(3) Even abstracting cost of carriage and assuming constant cost of production, a country may produce a commodity without exporting it, and may import a commodity which it also produces. Compare this with Mill's dictum that, but for cost of carriage, every com-

modity would (if trade be supposed free) be either regularly imported or regularly exported, and that a country would make nothing for itself which it did not also make for other countries.

(4) Rich countries are at no disadvantage in international trade, and poverty is no security against unfavorable terms of interchange.

(5) Small countries are at no advantage in international trade, unless they can specialize to the extent of devoting their whole resources to the production of one or two commodities for export in exchange for imports which, to produce at home, would have cost them much more than the exports with which they bought them. To the degree, of course, that any country, small or large, can do this, will its gains from international trade be great. This is a matter of soil, climate, natural resources, situation, and many other factors, of which size is one.

So much for the negative aspects of the present analysis. The positive conclusions may be set down in the following propositions:

1. Competition is as significant in the theory of international values as in that of domestic; and just as in domestic trade the abstraction of all but two individuals and two commodities from a market, and the later introduction of new commodities and new traders, would give us results very different from those which would issue out of a consideration of the market as a simultaneous whole, so does a similar method in the theory of international trade result in conclusions that have no application to reality.[9]

2. Quite apart from changes in the conditions of production, the comparative advantage of any given country is not a fixed but a shifting thing, moving according

9. See Marshall, Principles of Economics, Appendix F.

to the alterations which take place in the rate of interchange of the traded commodities. A movement of the terms of exchange against any country is accompanied by an increase in the number of commodities capable of export by that country and a diminution in the number of commodities capable of import.

3. The shifting of commodities from the export to the import side, or *vice versa*, as the rate of interchange of goods moves in one direction or the other, prevents a precipitous movement in that rate such as, without this check, would take place whenever the phenomenon of an elasticity of demand less than unity should appear, a demand, that is, which diminishes less than proportionately to a rise in price.[1]

4. A country secures a smaller or larger share of the gains arising from international trade according to the degree in which the rate of interchange of commodities which secures equilibrium in international trade varies from the rate which would prevail in the exchange of the commodities concerned within the country, were that country on a self-sufficing basis. So far as the share in the gains is concerned, it makes no difference whether this variation is due to great superiority in the production of the goods which are exported or to great inferiority in the production (were any produced) of the goods which are imported.

5. A country may, as a supplement to home production, import a commodity in which it has a comparative advantage as great as in those commodities which it is exporting. (See, for example, the case of country D in the production of chairs, page 76).

6. The distribution of productive resources within a country (with trade free) is determined not only by the

1. See also Marshall's interesting discussion of this and related topics in his Money, Credit and Commerce, Appendix J.

principle of comparative advantage, but also by the general trading situation, and may result in very unequal relative development of two industries which, at a given rate of interchange of their products, offer equal opportunities of profit.

7. In international trade the fluctuations in the rate of interchange of such commodities as are produced at approximately constant cost, and such fluctuations in the rate of interchange of other commodities as are not due to changes in the cost of production of one or more of them, will, if those commodities be produced in several countries, be confined within a rather narrow range. This is due to the fact that any alteration in the rate of interchange will affect the margin of comparative advantage of some country in the production of some one of the commodities concerned, will bring that country in as an exporter where formerly it was an importer, or as an importer where formerly it was an exporter, according as the terms of interchange move one way or the other, and, by the affected country's addition to the supply or demand side, will keep the terms of interchange from moving far from their original position. There would thus seem to be but slight opportunity of seriously affecting the terms of international interchange of products by duties or otherwise.

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THE LIFE AND WORK OF MAX WEBER [1]

SUMMARY

Weber's life, field of work, principal publications, 88. — His position on the method of social science, 90. — The "Ideal Type" and its methodological significance, 95. — Its bearing on the methods of economics, 98. — Weber as sociologist, 100. — Relation of sociology to other sciences, 103. — Conclusion, 106.

When the news of Max Weber's death came, in the summer of 1920, his colleagues felt that another of the really great workers in the field of economics had passed away; that after the deaths of Schmoller and Wagner we had again lost one of our best. But economists were not the only ones to whom the news was a great blow: the loss was keenly felt among the representatives of all the social sciences in the broadest sense, indeed, among all scholars. For Max Weber was one of those universal scholars of whom there are very few today; universal in the double sense that his teaching and his works have enriched the most varied branches of knowledge, and that their effect has extended far beyond the boundaries of Germany, to all educated nations. I am glad to comply with the request of the editor of this journal to make the posthumous publication of his last book the occasion for a sketch of the work of this scholar.

I will first endeavor to give a general outline of Weber's scientific work, and then to give a more detailed account of those fields of investigation which will be most permanent and fruitful for the work of future generations of scholars.

1. Translated by Professor A. E. Monroe.

How little of a specialist Weber was is shown by the fact that he did not begin life as an economist but as a jurist. Weber was born in Charlottenburg, April 21, 1864. He first studied jurisprudence at the Universities of Heidelberg, Strassburg, Berlin, and Göttingen, then became Gerichtsreferendar, and took his doctor's degree at Berlin in 1888. A little later he left the Prussian judicial service, with the rank of Assessor, and in 1892 became a lecturer on Roman and commercial law at the University of Berlin, where he was appointed professor of commercial and German law in 1893. The next year he accepted an appointment as professor of economics at the University of Freiburg, and in 1897 was called to Heidelberg in the same subject; but on account of bad health he gave up teaching from 1913 until the end of the World War, resuming it first at the University of Vienna and later at the University of Munich. The very fact, however, that during the interval he had no teaching duties gave him the necessary leisure for literary activity, which he pursued with a scope and a thoroness almost unique. His investigations were uncommonly varied and widespread, and it is difficult to say what field was his chief domain; for this versatile, keenly interested spirit attacked with the same intensity all the problems which occupied his attention. He shunned no labor needed to penetrate even into neighboring sciences; for example, he learned Russian, because he desired to use Russian sources in his studies on the Russian revolutionary movement. Unfortunately many of his works were left in the first stages, because new problems kept attracting him; and the completion of other works was made impossible by his early death. But much is complete and in final form, and in collaborative works, some of which appeared during his life-time and some of which were prepared after his death, many a

piece of his life-work is also clearly recognizable in its full development and in systematic coherence.

The following are notable products of Weber's literary activity. His juristic interests led to his first longer publication, *Zur Geschichte der Handelsgesellschaften im Mittelalter*, Stuttgart, 1889. He also published various juristic works later, such as his article in Goldschmidt's *Zeitschrift für das gesammte Handelsrecht* entitled "Ergebnisse der deutschen Börsenenquete" (1894–96): his opinion for the German *Juristentag* on homestead law (1897); and his article on term settlements in the *Deutsche Juristenzeitung* (1896). In connection with his studies in historical jurisprudence he was especially interested in problems of economic history, and he enriched this branch of economics with many valuable contributions. Especially noteworthy are his contributions to agrarian history, such as his *Römische Agrargeschichte*, Stuttgart, 1891, and his article "Agrarverhältnisse im Altertum" in the *Handwörterbuch der Staatswissenschaften* (1st–3rd edit.). The address which he delivered at the International Congress at St. Louis in 1904 discusses German agrarian problems of the past and present (*The Rural Community*. Congress of Art and Science; edited by H. J. Rogers. Boston, 1906). In addition to agrarian history he devoted special attention to agrarian policy. The careful investigations which he made for the Verein für Sozialpolitik on the situation of the agricultural laborers in East-Elban Germany (Publications of the Verein, vol. 55, 1892) received the highest praise.

Unfortunately Weber did not publish a comprehensive work on economic history, but this lack has just been remedied to a considerable extent by a volume compiled from his papers.[2] It is printed from the lectures

2. Max Weber, Wirtschaftsgeschichte. Aus dem Nachlass herausgegeben von S. Hellman und Dr. M. Palyi, Munich and Leipsic, 1923.

that he delivered during the winter semester of 1919–20 in Munich, under the title, *Outline of Universal Social and Economic History*. Weber himself would not have published this work; for, as is inevitable with a course of lectures, it is not so rounded-off or so mature and complete as is expected in a published work. But the editors deserve thanks for publishing it, for it gives a general impression of Weber's ideas concerning the most important problems of economic history. The sections on agrarian history in particular show plainly the experienced scholar in this very field.

A very large part of his publications is devoted to the logico-methodological problems of social science. The most important of these works have been collected and published in a special volume.[3] From the titles of the separate essays (given in the note) the reader will get an impression of the range of separate problems discussed. Since I shall later deal fully with Weber's position on questions of method, it is enough here to point out that Weber not only discussed the logical problems of method underlying our science in general, but also made clear his position most thoroly on particular problems. Here we should mention especially his paper putting forth a program on the methods of conducting the investigation by the Verein für Sozialpolitik on the selecting and adapting of the labor force in the great closed industries. His penetrating critical studies on the theory of marginal utility must also be noted.

On the basis of the fundamental methodological con-

3. Gesammelte Aufsätze zur Wissenschaftslehre, Tübingen, 1922. Roscher and Knies and the Logical Problems of Historical Economics; The Objectivity of Knowledge in Social Science and Policy; Critical Studies in the Logic of the Cultural Sciences; R. Stammler's "Conversion" to the Materialistic Conception of History; The Theory of Marginal Utility and the Fundamental Law of Psychophysics; "Energetic" Theories of Culture; On Some Categories of Understanding Sociology; The Meaning of "Value-freedom" in the Sociological and Economic Sciences; Methodological Bases of Sociology; Science as a Profession; Supplement to the Essay on R. Stammler's "Conversion" to the Materialistic Conception of History.

ceptions thus developed, he discussed all the problems of sociology, to which, indeed, he devoted the greater part of his life. He planned to write a complete sociological system, including an economic sociology, a legal sociology, a political sociology, and a religious sociology. Unfortunately his death prevented the execution of this plan. But we have two works which give some idea of how Weber had intended to deal with this field, and what he would have done if he had not been called away prematurely. First, there is *Wirtschaft und Gesellschaft*, the third part of the collaborated *Grundriss der Sozialökonomik* (Tübingen, 1922). Unfortunately certain chapters of this work are incomplete, and many were not published until after his death. Much of it is therefore in many respects only a torso; nevertheless it gives a good survey of the way he intended to penetrate, with great sociological relationships as a starting-point, into all social and economic life. Second, we have his religious sociology, gathered in three volumes.[4] At the head of the collection is the essay on Protestant ethics and the spirit of capitalism. From this we get the best idea of the fundamental conception that Weber had of the relation between religion and economic and social phenomena. Besides these and other formal essays, the volumes contain studies on the economic ethics of the world religions, including one on China in revised and expanded form, one on Hinduism and Buddhism (vol. ii) essentially unchanged, and one on ancient Judaism (vol. iii) published after the author's death by his wife in un-

4. Gesammelte Aufsätze zur Religions-sociologie.

Vol. I, 1920: Prolegomena; Protestant Ethics and the Spirit of Capitalism; The Protestant Sects and the Spirit of Capitalism; The Economic Ethics of the World Religions — Introduction; I. Confucianism and Taoism; Intermediate Study; Theory of the Stages and Directions of Religious Withdrawal from the World.

Vol. II, 1921: The Economic Ethics of the World Religions — II. Hinduism and Buddhism.

Vol. III, 1921: The Economic Ethics of the World Religions — III. Ancient Judaism; Supplement, The Pharisees.

completed form. In this third volume there is no presentation of Talmudic Judaism; there is only a section on the Pharisees, designed to serve as a transition to this subject. It was the plan of the author to take up early Christianity and Islam later. In this work Weber seeks to present the economico-ethical motives and effects produced by the various religious systems, and to discover what socio-economic factors have played a rôle in historical development. He shows in particular how strongly religious influences, namely Puritanical, have affected the development of modern capitalism. In contrast to the one-sidedness of the Marxian materialistic conception of history, which he rejects, he sought to show how significant the ethico-religious influences have been and demonstrated that the content of religious consciousness is never derived from economic factors.

Max Weber was not only a scholar, but also a politician, tho not in the ordinary sense of the word, for he played no directly active political rôle. He enriched literature by several discriminating political compositions.[5] After the collapse of Germany he could think of the German future only as a democracy and a republic, and he fought with all his energy for a union of the middle and working classes.

Finally we must mention Max Weber's activity as an editor. He drew up the plan of a great comprehensive compendium of social economics, entitled *Grundriss der Sozialökonomik*. Three volumes were completed at the time of his death; but the complete work is to contain many more, the supervision of which is left to his successors. This great work will, when completed, far surpass, both in scope and content, the great collaborative publications of former days, such as Schönberg's *Hand-*

5 The papers are collected in a volume published in Munich in1921 under the title, Gesammelte politische Schriften.

buch der politischen Ökonomie and Frankenstein's collection of reference and textbooks in political science. Almost every part of the field of social science is treated there by competent specialists. In his skillful hands the general plan of the work was drawn up in the best way. May the future editors and collaborators succeed in completing it in Weber's spirit.[6]

I turn now to Weber's position on the question of the method of social science; and first, on the objectivity of knowledge in social science and social policy. Can social science take a strictly scientific position in the sense of exact investigation, such as the natural sciences employ, not only when it is a question of investigating what the social phenomena of the present are and how they have become so, but also when it is a question of suggesting goals to be set up for future economic and social policy?

In scientific economics this question has often been answered in the affirmative by representatives of the most varied tendencies. Thus the leading representatives of classical economics insisted upon the scientific character of their demand for a policy of economic freedom, with the argument that economic life flourishes best, for reasons of natural right and natural law, when individuals enjoy the greatest possible freedom in their economic activities. The historico-ethical school of economics, which attacks this natural-rights, natural-law tendency most vigorously, takes the same position on this question. Its demand for great government interference in economic life, for example in the field of protection to labor, the nationalization of certain branches of business, is made as a demand of "science." Economics, its representatives say, is an ethical science.

6. Thus far the following volumes have appeared. Vol. I, Wirtschaft und Wirtschaftswissenschaft; vol. II, Die Natürlichen und Technischen Beziehungen der Wirtschaft; vol. III, Wirtschaft und Gesellschaft; vol. V, Bankwesen; vol. VI, Industrie — Berg und Bankwesen; vol. VII, Land- und forstwirtschaftliche Produktion und Versicherungswesen.

From the standpoint of the general welfare, which it represents, the wishes of interested parties and particular classes must be opposed by this postulate.

This claim of a "scientific" basis for the determination of economic and social policy Max Weber opposes. He examines the question: are there objectively valid truths in the sciences of cultural life at all? His answer is in terms of the logico-methodological system more especially of Rickert and Windelband, by pointing to the necessity of strictly separating empirical knowledge from value-judgments. It should never be the task of an empirical science to develop binding norms and ideals, for the purpose of deriving rules for practice from them. Only positive religion can confer the dignity of unconditionally valid ethical precepts. Again and again the mistake is made of assuming, even in the social sciences, that the distinguishing mark of scientific investigation of reality is to be found in definite "laws," that is, in the regular recurrence of definite causal relationships. In social science, however, it is a question of *understanding* spiritual events as they appear in perspective — a very different task from that set for the natural sciences. The latter have the task of setting up formulæ of exact knowledge of nature, while the cultural sciences, in which social science is to be included, have the task of understanding the phenomena of life in their *cultural significance*. The significance of cultural phenomena however, cannot be grasped, according to Weber, from concepts of scientific law; for such a procedure assumes the dependence of cultural phenomena upon subjective valuations. The concept of culture is a value concept. All value-judgments are subjective and change in the course of history with the character of the culture and of the ideas controlling men. It is obvious that any investigation of realities which goes back to ideals alleged to

be established scientifically as premises does not lead to genuine realities, but arrives only at mental figments whose value for purposes of explanation is more than questionable. From these considerations Weber concludes that the economist, in dealing with questions of social and economic policy, always acts on the basis of subjective value-judgments, not of strictly exact knowledge. He does not conclude from this that the economist should refrain from dealing with such questions; he should be conscious only of the difference between the strict objectivity of his investigations directed toward the explanation of causal relationship, and the subjectivity of his discussions aiming at postulates of economic policy. Science has the task of always making clear to her disciples where the thinking investigator ceases to speak and the man of will begins to do so; where the arguments appeal to the understanding and where to feeling. The mixture of the scientific discussion of facts and of reasonings on processes of development must be removed from our subject. The sciences, normative and empirical, can render the contending and politically acting parties only one invaluable service, namely, to say to them: in the first place, there are these various "ultimate" positions conceivable with respect to practical problems; in the second place, the facts with which you will have to reckon in choosing between these alternatives are thus and so. But the professor should make no pretensions to carrying the marshal's bâton of the statesman or reformer in his knapsack, as professor. This he does when he uses the shelter of the lecture-room to express opinions on questions of political or cultural policy.

Another and important phase of Weber's position on questions of method is his presentation of the "Ideal Type" as an aid to the forming of concepts.

Every science, social science included, must work with

concepts. What then is the specific structure of the theoretical formation of concepts, in so far as it is particularly suitable for the understanding of cultural reality, and adapted to the nature of social science as contrasted with the natural sciences? These concepts are concerned with constructive measures; that is, they should be heuristic. Over and above every stage of empirical rationalism, a rational inter-connection of human doings should be built up in our minds. Such an aid is the ideal type (*Idealtypus*) in Max Weber's sense. What does Weber mean by the ideal type? It is a concept which raises the more or less rational relationships encountered in reality to the absolute, and leads given social situations to be measured in mental experimentation only by that highest degree of objectively possible rationality. The ideal type always aims to bring to the simplest and sharpest possible expression those constituents of phenomena upon which their cultural significance depends and which are characteristic of their individuality. It represents an exaggerated reality: the highest expression of those empirical circumstances which, in various degrees of approximation to the "ideal," determine the "individual peculiarity" of particular cultural phenomena — "historical individuals" — and contribute to the basis and meaning of their significance.

Let us illustrate this by an example. The "medieval city economy" is an ideal type. By that is meant an "ideal" situation, in which a city, with the surrounding rural district, makes up a completely autonomous economic unit, cut off from outside and supplying all its wants by exchanging industrial for agricultural products. The concept is not worked out as an average of the economic relations actually existing in all cities, but is reached by one-sided emphasizing of one or several

points of view and by combining a multitude of individual phenomena which unite with these one-sidedly selected points of view to form a unified mental image. In its conceptual purity this mental image is never empirically discoverable in reality. It is a Utopia, and the task of historical research is to determine in each particular case how near or how far the reality approaches the ideal image — how fully the economic character of the relations of a particular city is to be regarded as "city-economic" (*stadtwirtschaftlich*) in the idealized sense. For the purposes of investigation and illustration this concept, carefully applied, renders its specific services.

"Capitalism" and "capitalistic economy" also constitute an ideal type. Capitalistic economy, in the sense of an economy which is orientated only by calculated capital investment and is determined only and solely by unlimited profit-seeking, has never existed anywhere. Neither individual economic subjects, nor larger groups of them, nor the economic life of any country, nation, or period have ever been purely "capitalistic" in this sense. None the less the sharp working-out of certain culturally significant features can characterize with clearness the nature of capitalistic economy.

On the same logical principles that are followed in constructing the ideal type of the city economy of the Middle Ages we can also develop the idea of the historically given modern exchange-economy organization; and in this way the ideal type is also made fruitful for abstract economic theory. Abstract economic theory offers an ideal picture of what goes on in the goods market in social organizations based on exchange, free competition, and strictly rational actions. This mental picture unites particular relations and procedures of historical life into a consistent cosmos of imagined relationships. In its content this construction has the character of a

Utopia which is arrived at through mental emphasis on particular elements of reality. Its bearing on the empirical facts lies in the circumstance that where a relationship of the kind abstractly presented in that construction, that is, the phenomena resting on the "market," is found or suspected to exist in any degree, we can explain and illustrate the characteristics of this relationship by reference to an ideal type.

The so-called fundamental concepts of economics are also to be developed in genetic form as ideal types. The so-called economic "laws" are likewise ideal types. Take Gresham's Law as an example. It is a rationally evident result of human actions under given conditions, and on the ideal-typical assumption of purely calculating action. How far men actually behave in accordance with it can be learned only by experience stated in statistical terms concerning the actual disappearance of undervalued forms of money from circulation. In fact it shows very wide validity.

How near is Weber's ideal type to the earlier familiar method of isolating abstraction in theoretical economics? to the economic man of classical economics, the "typical" phenomena of Karl Menger's economic theory, in which men are assumed who seek absolutely nothing but economic ends? What is the relation between the ideal type and the normal man of marginal utility theory, constructed on the assumption of a specific psychological attitude? There is surely a considerable agreement between Weber's ideal type and the methodological procedure of the above-mentioned economic schools. In these it is also a question of "fictions"; instead of the complete reality of economic life, certain important factors of economic behavior, such as the influence of self-interest, are assumed by themselves, are isolated, and conclusions are drawn from them. Ab-

stract economic theory invents a society which is determined only by the action of certain economic forces.

On the other hand, there is also a great difference between the two methods. Abstract economic theory believes that *reality* can be deduced from the laws which it sets up, so that, if the corresponding exact theories were worked out for all the other factors to be considered, these abstract theories taken together must contain the true reality of things. Exact economic theory has to determine the operation of one psychic motive. Other theories have the task of developing all other motives in a similar way in propositions of hypothetical validity. The theories of price, rent, interest, wages, thus worked out, should then, by analogy with certain physical principles, be employed to deduce quantitatively definite results — laws in the strictest sense, valid for the reality of life — from given real premises; since economic laws, where the end is given, are plainly determined in relation to the means.

This view of Karl Menger and other theorists, that theory has to investigate the regular operation of *real factors*, and that from these factors actuality is to be put together as their summation, does not accord with Weber's view. Weber must reject the quasi-natural-law validity of the principles of economic theory in Menger's sense, since with his ideal types he means only to characterize historical phenomena in their cultural significance. Weber objects to Menger that the latter did not take into consideration the fact that, in order to obtain this result, namely the understanding of the actual phenomena, the whole of the historical reality and all its causal relationships must be considered as "given" and assumed to be known. Weber calls it a naturalistic prejudice to suppose it possible to achieve with these concepts something akin to the exact natural sciences.

People had believed, he says, that it was a question of the psychological isolation of a specific motive, the motive of gain in man; or of the isolated observation of a specific maxim of human activity, the so-called economic principle. Abstract theory had believed it possible to rest its case on psychological axioms; and the consequence was that the historians demanded an empirical psychology, in order to be able to show that these axioms were not valid and to deduce the course of economic events in a really psychological way. According to Weber socio-psychological investigation means an examination of separate very dissimilar categories of cultural elements in their significance for our comprehension. By socio-psychological investigation, starting with the knowledge of the several institutions, we should learn to understand in increasing degree their cultural conditionality and cultural significance, not wish to deduce institutions from psychological laws or to explain them by psychological elemental phenomena. With the ideal type the question is not one of the actual constituents of reality, as Menger's method assumed, but of *unreal* exaggerations of it. In this sense only should abstract economic theory be ideal-typical; and this, moreover, is the most complicated and most highly elaborated case of ideal-type concept. It makes a whole series of ideal-typical assumptions and combines them into a closed ideal picture of economic situations, which it develops in imaginative, constructive mental effort. It is clear that Weber, proceeding from this point of view, could not but reject the theory of marginal utility; for this theory wishes to set up psychological laws, that is, conformities to law resting on a fundamental psychic force.

While in other countries, for example, in America and France, sociology has long won a place as an indepen-

dent science, there is still vigorous controversy in Germany concerning sociology's right to be considered a science by itself. There is even a controversy over the question, what is sociology? And as a matter of fact the conception of sociology is extraordinarily fluctuating and has many variants. Max Weber himself, at the first German convention of sociologists, spoke of the fluctuating meaning of the term sociology and of its unpopular name. And a witty colleague, the late Alfred Dove, the historian, once defined sociology as an institution for the loan of verbal diguises. It is by no means the name only, however, against which criticism is directed, but the subject also, namely, the fact that under the name sociology sciences of the most heterogeneous sort are often combined without sufficient separation of the various problems according to the methods by which they are to be treated. First of all, opinions disagree on the question whether the problems with which sociology deals afford material for a separate science at all, or whether it is better to deal with them in the special sciences — economics and jurisprudence, especially the philosophy of law, of economics, of politics, of religion. But even those who take on this question the position that sociology is a separate branch of science having its special problems, differ widely on the question of method. One school wishes to investigate all human development. Since man is not only a social but a natural being, their investigations would have to be partly of the type pursued in the social sciences and partly of the type pursued in the natural sciences. This school is connected primarily with Comte and Spencer. It wishes to reveal the course of human development quite in the manner of natural laws. The same view is held by the American sociologist Giddings. He describes sociology as an attempt to trace the origin, growth, and activities of human society back to physi-

cal, vital and psychological causes, which work together in a process of evolution. He insists that natural selection controls social phenomena, and agrees with Comte and Spencer that the supplementary influence of social factors does not set aside selection, because it is only modified by this influence. "It is merely an enormous multiplication of the variations on which natural selection finally acts." The sociologist sees, what no jurist recognized before Darwin, that the sovereign will is inevitably determined by natural selection.

The other school of sociology, represented especially by Simmel, is of quite the opposite opinion. It keeps its investigations upon a socio-scientific basis, and wishes to be a study of the *forms of socialization*; it wishes to explain the phenomena resulting from the social behavior of man, which appear wherever men are gathered in groups. From this historico-philosophical point of view, the setting up of so-called historical laws is rejected. Simmel has shown in his *Problemen der Geschichtsphilosophie* why there can be no historical laws, that we can offer only provisional summaries of the typical phenomena of history, provisional orientations concerning the mass of separate facts.

On these controversial questions Max Weber takes the following position. (1) He recognizes sociology's character as a special science, and holds that it should not be a collective name for several independent sciences, but a science by itself. (2) For this science he rejects the method of natural science, and wishes to have it handled with the methods peculiar to the cultural sciences. He took an enthusiastic part in the founding of the German Sociological Society; and there is no doubt that if anyone could have succeeded in helping sociology to make its way, it would have been Max Weber. With his surpassing attainments in the most varied fields of knowl-

edge, with his keen training in methodology, he would have been able to develop sociology into a firm structure. Now what remains is only a torso. But still, and apart from his religious sociology, we have in his great work *Wirtschaft und Gesellschaft* the first steps toward constructing a general system of sociology.

In Weber's sense, sociology should mean "a science which seeks to understand social activity in its significance, and thus to explain it causally in its course and in its effects."

"Activity" should mean human behavior, if and in so far as the man or men acting combine a subjective meaning with it. "Social activity," however, should be such activity as by its meaning is related to the behavior of others.

"To understand" means significant comprehension (*a*) of what is really found in a particular case (in historical observation), or (*b*) of what is found on the average or approximately (in sociological mass observations), or (*c*) of the meaning or meaning-relationship to be scientifically constructed for the pure type (ideal type) of a frequent phenomenon.

This conception of sociology has nothing to do with the method of so-called organic sociology, of which the classic example is Schäffle's *Bau und Leben des sozialen Körpers*. The individual and his behavior are there interpreted as physiology treats a bodily organ. According to Weber, social structures, in contrast to organisms, are in a position to yield, over and above the mere determination of functional relations and laws, something which is unattainable for natural science, namely, the *understanding* of the behavior of the individuals involved; whereas we do not understand the behavior of cells, for example, but can only grasp it functionally and determine the rules of its course accordingly. This

larger achievement of the interpreting as compared with the observing explanation is purchased, to be sure, at the cost of the essentially hypothetical character of the results to be obtained by interpretation. But it is precisely what is peculiar to sociological knowledge. It is always a matter not of laws in the exact sense of natural science, but of adequate causal relationships expressed in rules, of employing the categories of objective possibility. "All analogies with the organism and with similar biological concepts," declares Weber, "are condemned to unfruitfulness."

Sociology is not history, for history seeks the causal analysis and attribution of individual culturally important activities, structures, and personalities. Sociology, on the other hand, seeks type-concepts and general rules of development. Nevertheless, there are close relations between sociology and history; for in forming its concepts sociology takes its material very essentially from the realities of behavior which are relevant from the standpoints of history. It also forms its concepts from this standpoint: whether it can in that way render a service to the historical attribution of the culturally important phenomena. But, as in all sciences of generalization, the characteristic of its abstractions postulates that its concepts, as compared with the realities of history, must be relatively empty; what it has to offer instead is enhanced simplicity of concepts. It is attained through the highest possible adequacy of meaning, such as is sought in the sociological formation of concepts.

Nor is sociology psychology. Weber considers it a mistake to regard any psychology as the ultimate basis of a sociology that understands. The results of scientific psychology might naturally, like those of other sciences, have significance for a sociological conclusion in a particular case, and often have it in high degree; but

sociology has no closer general relations to it than to any other discipline. The rational reflection of a man — whether a particular action, determined according to given interests, is beneficial or not, according to the consequences to be expected, and the decision reached in accordance with the outcome — is not made a whit more comprehensible to us by psychological considerations. It is upon just such assumptions of rationality, however, that sociology must build.

Finally, we must also separate the sociological from the juristic point of view. Take the concept "state" as an example. Jurisprudence upon occasion treats the state as a legal personality, similar to an individual human being; because its work, directed to objective sense-significance, that is, to a content that should be valid, finds that conceptual procedure useful. Sociology, on the other hand, so far as law comes under its consideration, is not concerned with the investigation of that content of logically accurate legal principles which is objective, but with a course of action as its determinant and resultant, in which among other things men's ideas concerning the meaning and validity of particular "legal principles" play an important rôle. Thereby their behavior may be much influenced; that is the conceptual sociological significance of the empirical validity of a legal principle. If sociology often uses the same phrase as juristic science, the precise juristic sense is not what is had in mind.

On the basis of these principles of definition and methodology, Weber gives in his great work, *Wirtschaft und Gesellschaft*, a deep-reaching sociological study of all economic and social relations. The work contains an economic, political, legal, and religious sociology. One marvels at the enormous labor involved, and is in doubt whether to admire most the abundance of informa-

tion or the systematic penetration of the facts from sociological viewpoints. The sociological types of authority (such as the estate-patrimonial authority, the feudal authority) of parties, of classes and estates, the penetrating studies on nation, folk, and race, offer a mine of instruction and stimulation for all who are interested in sociology.

Let us ask finally: did Weber found a school? Did he leave behind a large group of pupils, who will continue and complete his work in his spirit? Is there a Weber school, as there is a Schmoller and a Knapp school? Weber did not found a school in the sense that these economists did. Schmoller's chief work was in economic history and particularly Prussian administrative history. In order to obtain materials for this field of investigation, he trained many pupils in the strict discipline of his method. Knapp had two favorite fields of scientific activity: the history of agrarian freedom and the theory of money. Here also a large group of Knapp pupils had to supplement and complete the fundamental inquiries undertaken by him with many investigations of particular points, which had to be carried out in the sense and according to the method of the master. Max Weber, as we have shown, was a much too universal spirit to found a school in this sense. He cultivated and built in the most varied fields of social science, and men so universally interested are much too rare to be able to gather such a group of pupils around them. I might say that one would have had to be a second Max Weber in order to be Weber's pupil. But if he did not found a school in this sense, he did so in another sense. In the most varied and diverse fields of knowledge, investigators in various countries have been so stimulated by his inspiration and his work that they endeavor to continue

investigations in their special fields in his spirit. An evidence of this extensive influence of Weber is the volume published in his memory.[1] Economists and jurists, philosophers and philologists united with historians of all schools in this collaborative volume. It contains essays on methodology, on the structural problems of the modern state, on the sociology of religion, of the arts and sciences, of classes and estates, studies in economic history and economic policy. May the seed which Weber sowed in richest plenty produce abundant fruit among many more generations of scholars, for the advancement of strictly scientific investigation, and to the honorable memory of one of the best scholars we have ever had.

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7. Erinnerungsgabe für Max Weber. Vol. I, edited by M. Palyi; Munich and Leipsic, 1923.

THE COLLAPSE OF BANK-DEPOSIT GUARANTY IN OKLAHOMA AND ITS POSITION IN OTHER STATES

SUMMARY

Failures of State and National Banks in Oklahoma contrasted, 110. — State banks seemed to flourish during the war; many failures after 1920, 111. — Political complications, 114. — Repeal of the guaranty legislation, 117. — Situation in other States: Kansas, 121. — Nebraska, 124. — South Dakota, 127. — North Dakota, 128. — Mississippi, 129. — Washington, 130. — Texas, 131. — General arguments and conclusion, 134.

THE Oklahoma experiment in guaranteeing bank deposits is over. It began in the panic of 1907 and ends with millions of dollars of deposits in failed banks unpaid.

Oklahoma is a picturesque commonwealth. Formed out of the old Indian country, long after the states around it had been settled, pioneer conditions have continued far into our own day. Into the State, along with men and women of the highest culture, have come border desperadoes like the Daltons and Henry Starr. Blanket Indians and college graduates do business together. Brilliant young engineers from the Eastern universities work in the oil-fields with drifters drawn there, too, by the prospect of "black gold." The former Bank Commissioner of the State, long absent under indictment, has returned and surrendered to Governor Walton, who is perhaps the most remarkable character of all, famous for his pronouncements against the Ku Klux Klan, for his declaration of martial law, and now impeached by the House of Representatives and suspended from office by the Senate. Such are the high

lights. But the truer picture of Oklahoma is of grain and cotton and cattle, oil and coal, and of the 99 per cent of its population who work hard and honestly, making homes and building an American commonwealth.

The Oklahoma deposit guaranty experiment is a failure. The writer called it that in this Journal ten years ago. It would be the facile conclusion, and perhaps finally the right one, that since the guaranty of bank deposits has failed in Oklahoma, such insurance anywhere would always carry with it the seeds of its own inevitable destruction, and could not be permanently maintained. But the problem is not so simple as that. One must study how and why the Oklahoma system failed before one can be satisfied with any conclusion.

A few years after the writer had said the Oklahoma plan must be reconstructed or abandoned, many began to look upon it as a success. In 1913 there had been over $400,000 of Guaranty Warrants outstanding, with only $35,000 cash on hand,[1] and within a year the debt of the fund had practically doubled.[2] But then came the World War; and while its first effect in America was to depress agriculture, — cotton sold in Oklahoma for five cents, — it brought prosperity as soon as the German cruisers were off the seas and the products of American farms could be shipped. Oklahoma shared also in the boom after the war. Oil, cotton, corn, wheat, and land all rose in price, and state-bank failures became less frequent.

The following table of failures is constructed partly from the biennial reports of the successive bank commissioners, partly from information furnished by the Commissioner's office to the writer directly and through R. G. Dun and Company; as to national banks, from

1. Quarterly Journal of Economics, November 1913; vol. xxviii, p. 93.
2. Robb, The Guaranty of Bank Deposits, p. 105.

data furnished by the Comptroller of the Currency. The comparisons it suggests can be made safely only in the light of certain considerations set out on page 120.

OKLAHOMA BANK FAILURES

STATE BANKS		NATIONAL BANKS			
Year	Number	Year	Number	Capitalisation	Deposits
1913–14	21	1919	1	$25,000	$382,869
1915–16	6	1921	3	325,000	1,551,155
1917	4	(Reopened	2	225,000	1,313,510)
1918	2	1922	3	500,000	2,274,582
1919	5	(Reopened	1	100,000	314,129)
1920	8	(Second failure	1	200,000	929,662)
1921	27 (4 reopened)	1923	3	200,000	2,008,712
1922	32 (4 reopened)				
1923	16 (6 reopened)				

The prosperity and stability of the state system for some years after 1914 allayed the fears of state bankers that the annual assessments for the Guaranty Fund might be increased beyond the maximum permitted by then existing law, namely, two fifths of 1 per cent of deposits in 1914, 1915, and 1916, and one fifth of 1 per cent thereafter. Thirty-five state banks had nationalized in 1913 and 1914 [3] but only two did so in the next biennium.[4]

Deposits of both state and national banks grew in this period, as the following table shows.

NUMBER AND DEPOSITS OF OKLAHOMA BANKS

	Aug. 9, 1913	Dec. 27, 1916	Dec. 29, 1920	Dec. 29, 1922	June 30, 1923
STATE BANKS					
Number	596	547	622	464	443
Deposits	$42,000,000	$84,000,000	$160,000,000	$78,000,000	$73,000,000
NATIONAL BANKS					
Number	326	338	338	447	459
Deposits	$77,000,000	$144,000,000	$168,000,000	$317,000,000	$324,000,000

The figures have been taken from the reports of the Bank Commissioner and of the Comptroller of the Cur-

3. Fourth Biennial Report of the Bank Commissioner of Oklahoma, p. 316.

4. Fifth Biennial Report of the Bank Commissioner of Oklahoma, p. 298.

rency. "Deposits" in the several reports do not always include all the items that might be so classed, but the omissions are negligible for the purposes of this comparison. The growth in state-bank deposits between 1913 and 1920, and the decrease in failures, finally enabled the Guaranty Fund to catch up with its obligations; and on March 1, 1920, the Fund had not only paid off its debts but had $75,000 in the Treasury.[5]

The state system became attractive again. According to the records of the Comptroller of the Currency, thirty-one national banks left the national system and took state charters in the five years from 1916 to 1920. They had an aggregate capital, as national banks, of $895,000 and deposits of more than $4,000,000. Only five state banks were converted to nationals in the same years, but they were larger banks, having $650,000 capital and nearly $8,000,000 deposits.[6] They may have seen the storm coming. At any rate they withdrew their business from exposure to assessments for the Guaranty Fund.

The war had not saved deposit guaranty. It is unnecessary here to write the story of deflation. A few items from the Year Books of the Department of Agriculture and the Statistical Abstract will recall its course. The wheat crop of 1919 was worth $107,000,000 on Oklahoma farms, but that of 1920 only $73,000,000. The corn crop was valued at $94,000,000 in 1919 and at $42,000,000 in 1920. Cotton was worth $209,000,000 in 1919, but next year Oklahoma again saw cotton sell at five cents a pound, and 100,000 acres went unpicked. The tenants could make more by working at other tasks for somebody else than by picking their own cotton for

5. Robb, The Guaranty of Bank Deposits, p. 106.

6. Tables from January 1, 1913 to September 24, 1923, furnished the writer by the Comptroller of the Currency.

their own share of the crop. The farm value of cotton in 1920 was only $96,000,000.

Of course there were bank failures in 1921. The Farmers State Bank of Ada, closed in January, cost the Guaranty Fund $50,000. Both banks in Kiefer closed the same day and cost the Fund $424,000. Someone said there was nothing like harmony among competitors. The Oklahoma State Bank of Guthrie closed in October, and cost the Fund $589,000. Warrants for $2,196,000 were issued in 1921, to cover the deposits of thirteen banks; and then the Bank of Commerce of Okmulgee failed November 1, with deposits of $1,732,540.

That broke the system down. The Okmulgee depositors realized that under the guaranty law the good assets of their bank would be turned into the Guaranty Fund and would go to pay, so far as they reached, the $2,000,000 warrants already issued to cover earlier failures. Seven other banks failed about the same time, whose deposits, added to those of the Okmulgee institution, made $2,316,000.

Here was the arithmetic of the situation.

Warrants already issued	$2,196,000
One-half the deposits of the other failed banks (a conservative estimate of the losses)	1,158,000
Liabilities of the Fund	$3,354,000
This sum would draw 6 per cent interest, or	$201,340

But total deposits subject to assessment for the fund were only $156,000,000, and the maximum assessment of one fifth of 1 per cent would produce annually only $312,000. This would leave to apply on principal only $111,000 per annum. Obviously it would be twenty years before any payment could be made from the Fund on the principal of the Okmulgee deposits, even if there

were no more failures to increase the interest requirements, and if no more state banks left the system. It was a reduction to the absurd, and without much objection the Guaranty Fund was ignored and the assets of the Bank of Commerce of Okmulgee were devoted to the creditors of that bank alone.

It is a failure worth study. About a year before it happened, the Guaranty State Bank of Okmulgee had been consolidated with the Bank of Commerce, under the latter's name, altho well-posted bankers protested to the Bank Commissioner, Dennis, that the Guaranty State Bank was in no condition for such an operation. Dennis either did not know the condition of the bank, or did not choose to admit that it was dangerous. It is said that both banks made loans beyond the legal limit, on security that ought not to have been accepted by any bank.

The bank rather specialized in savings, and in dozens of cases people were caught for every dime they had. The other banks had to make small loans so that people could eat and pay household expenses till the next pay day. There was a young couple, married about two years, the husband working in the post office and the wife in one of the stores. By scrimping and saving they had got together about $800 for a first payment on a little home, but the dream faded with the closing of the bank. An old man had sold his farm and his wife had persuaded him to put the money, $2000 in the Bank of Commerce, "because it was guaranteed." It was all the money the old couple had, and the husband died. The widow is sure the failure caused his death. She has received 15 per cent of the account, and it is estimated that there may be dividends of 15 or 20 per cent more. It came out in the debates on the repeal that the bank, instead of advertising that its depositors were protected by the Depositor's Guaranty Fund of the State

of Oklahoma, had, contrary to law, used a sign reading: "The State Guarantees all Deposits in This Bank." [7]

It has been mentioned that bankers protested to Bank Commissioner Dennis about the Guaranty State Bank before the consolidation. After the failure Dennis and the Governor of Oklahoma, Robertson, were indicted on the charge of accepting a bribe to permit the Guaranty State Bank to remain open. One grand jury was discharged by Judge Christopher when, as many believed, it was about to indict the Governor and the Commissioner, and the judge left the city for a time; but another grand jury, under another judge, returned an indictment. Dennis left the state, and his whereabouts were long unknown; but in September of this year he returned and surrendered to the present Governor, J. C. Walton. Dennis gave out a statement that he had remained away to regain his health and to await the restoration of a "visible" government in Oklahoma, implying, doubtless, his belief that up to this time the Ku Klux Klan had been in power. Governor Robertson had taken a change of venue, and his indictment had been dismissed.

As late as March 1922, the Executive Council of the State Bankers' Association (not the Oklahoma Bankers' Association, which includes national banks) expressed willingness to assume liability for the whole debt of the Fund, provided the state would lend its credit for a reasonable time.[8]

Thirty-two banks, however, were closed that year. Their deposits, not counting four of them which reopened, were $7,230,000. The situation was impossible. Almost any day one could meet Oklahoma state bankers visiting Kansas City to consult the Chief National

7. Harlow's Weekly, Oklahoma City, March 10, 1923, pp. 7, 8.
8. Trans-Mississippi Banker, Kansas City, Mo., April 1922.

Bank Examiner or the Federal Reserve Agent, and expedite a change to the national system. According to a list sent by the Bank Commissioner of Oklahoma to the writer September 26 last, 45 state banks were converted to national banks in 1921, 59 in 1922 and 17 in 1923 to that date. (Four other banks were listed, but the date of change was not given.) These figures evidently include state banks liquidated and replaced by new national banks, as the Comptroller of the Currency informs the writer of only 82 strict conversions, 24 of them in 1921, 50 in 1922, and 8 in 1923. By January 1923, the number of state banks had fallen to 453, and their deposits to $78,000,000.[9] Obviously, only state aid on a big scale could save the guaranty system in Oklahoma.

The Legislature met in January 1923. The platform of the successful party, the Democrats, had reaffirmed "faith in the principle of the guaranty of bank deposits," and pledged "the administration to a continuance of the guaranty policy which for fourteen years worked so efficiently. We hereby condemn," the platform went on, "the financial policies of the national republican administration and charge the temporary failure of our state guaranty system to the deliberate policy of enforced deflation of our circulating medium." The depositors were promised the return at the earliest possible date of every dollar due, and this "at no expense to the taxpayers."

A meeting of depositors in failed banks, held January 29, favored raising the annual assessments to 1 per cent. As this would have been equivalent to 10 per cent on capital, the bankers opposed it. A bill, H. R. 445, was introduced, and later made an administration measure, providing for the issuance of bonds to pay off the de-

9. Report of the State Examiner and Inspector of Oklahoma to the House of Representatives, on House Res. No. 21. Supplement to House Journal, February 21, 1923.

positors; the principal and interest of the bonds to be payable, however, only out of a fund to be created from the assets of closed banks and from certain taxes and fees. The effect would have been to throw the loss, or most of it, on the state and the tax-payers. It was argued that the state, by enacting the guaranty law, had "meddled" with the banking situation and was therefore "morally responsible" for the resulting mess. It was said, and truly, that many depositors had supposed that the state itself guaranteed their deposits. The sign of the Bank of Commerce was exhibited in the chamber of the House of Representatives. Much was heard of "scraps of paper" and of "state honor." Others held the bankers themselves responsible, because in 1913 they had procured the limitation of annual assessments to one fifth of 1 per cent a year. The present writer expressed his belief at the time that such limitation of the amount of taxation permissible for the replenishment of an insolvent fund was inconsistent with the permanence of the Oklahoma system.[1]

To the opposition of those who held that the state was under no obligation was added that of the Farmer-Labor Reconstruction Leaguers, who wanted instead a state-owned bank and believed that the profits of it would some day pay off the Fund liabilities. Such a bank had been favored in the platform on which Governor Walton had been elected, but it does not appear that he was ever himself an out-and-out advocate of the plan. Later the Leaguers voted against the repeal of the guaranty law. The state bankers naturally favored the bill, and it would probably have passed except for a doubt that arose as to the constitutionality of the money-raising sections. It was lost in the House, 38 to 58.

There was nothing left but to repeal the guaranty sec-

1. Quarterly Journal of Economics, November 1923; vol. xxviii, pp. 84, 93.

tions of the banking law. Otherwise every bank that could possibly have done so would have left the system, and the banks too small or not sound enough to be admitted to the national system would have little credit in the face of the liability for perpetual assessments for a perpetually growing deficit in the Guaranty Fund.

Another bill was pending, H. R. No. 13, to amend certain operating and administrative features of the existing banking law. After the defeat of No. 445 (the bill to issue bonds to pay depositors) sections repealing the guaranty of deposits were inserted in No. 13. It passed both houses, and Governor Walton signed it March 31, 1923.[2]

The guaranty system, in its fifteen years of operation to January last, had cost the banks of Oklahoma $3,647,-486.42.[3] Cash in the fund has increased from $4500 December 31, 1922 to $85,000 September 26, 1923, partly no doubt, from old assessments, and partly from collections of old assets of the banks that failed before the issue of warrants ceased. Warrants outstanding on that day were $1,336,999.27.[4]

As regards the future, the act of repeal provided that no bank, firm or corporation, nor any officer, stockholder, director, or any other person is relieved from any obligation, assessment, or liability, that existed at the time of repeal, to the Depositors' Guaranty Fund or to the depositors of any failed state bank.[5] Does any liability remain except for assessments actually levied before repeal? Assessments actually levied are the only

2. Mr. Thomas Bruce Robb, author of The Guaranty of Bank Deposits, 1921, has furnished the writer, among much other helpful material, a file of Harlow's Weekly, of Oklahoma City, from which the foregoing account of the events of the legislative session is largely drawn.

3. Report of the State Examiner and Inspector on House Resolution No. 21. Supplement to House Journal, February 21, 1923, p. 8.

4. Letter from the Bank Commissioner of Oklahoma.

5. Act of March 13, 1923, Sec. 10.

liability there ever was under the law, according to the Supreme Court of Oklahoma.[6] In fact the Court said in its overruling opinion: "It [the legislature] may repeal the law and thus relieve all the banks from the payment of these future assessments." Under the statute and the 1919 decision it would appear that the question is settled; yet, answering a question by the writer, the Bank Commissioner says: "The assessment against the banks, which is the one fifth of one per cent on their daily average deposits, ceased when the law was repealed. However, as to whether or not there will be any other assessment, to take care of the outstanding warrants and indebtedness, is problematical at this time, until this legal question can be determined by the Attorney General's office."

If there were any liability remaining, it might be a tremendous one. The deposits of banks closed before the repeal and still in liquidation are $9,373,117.23. Their assets are nominally $13,027,559.64 and their capital was $1,267,500. The Commissioner's office does not attempt any official forecast of the losses in these banks, but it is said that unofficially it estimates a deficiency of five to eight million dollars in all. Five banks with deposits of $625,000 have been taken over by the Department since the repeal.[7] The capital of all the state banks left in Oklahoma was reported April 3, 1923 at $8,913,000, with $1,896,000 surplus in addition.

There was a vote of the people October 2, 1923, on a proposal to levy a special tax sufficient to raise $2,000,000 each year for five years, to pay the depositors in failed banks. The canvas of the votes has been temporarily enjoined, but there was undoubtedly a great

6. Citizens National Bank *vs.* State, 76 Okla., 94, 184 Pacific, 63 (1919), overruling, by a divided court, State *vs.* Farmers National Bank, 47 Okla., 667, 150 Pac. 212.

7. Letter from the Bank Commissioner.

majority against the proposal. This was the election that Governor Walton tried to prevent — that at which the people voted authority to the legislature to convene itself at any time for the purpose of impeaching any state officer.

Guaranty had broken down in Oklahoma before Governor Walton took office this year, and nothing that his appointees have done or omitted contributed appreciably to the result. Politics do affect banking, however, and it throws some light on the political situation to note that in less than ten months the Governor appointed two Bank Commissioners, and removed them both. Mr. Joseph Strain, the first appointee, set out, it is said, to do the best he could, and when the Governor sought to displace him, Mr. Strain contested the removal. The Supreme Court held that the Governor was within his rights, and Dr. Ernest Bynum took charge of the office, only to be removed in his turn in October. The Governor stated that Dr. Bynum's administration of the office had been "entirely unsatisfactory" (it had lasted about a month) and that the Governor's own administration could not be effectual unless his appointees in the more important offices were in harmony with his purposes and loyal to his policies. Testifying before the committee of the House of Representatives that afterwards recommended the impeachment of the Governor, Dr. Bynum expressed the opinion that his own removal was due to the fact that he declined to appoint an incompetent man as deputy. The vicissitudes of the banking department have been such that the usual biennial report due as of January first has not been published.

How have the national banks fared in Oklahoma during war and readjustment? A comparison is hard to make for fear of misunderstanding. The writer believes

in state banks, is a director in two of them, and a stockholder in others; not, it is true, in Oklahoma, but in other states where also failures of national banks are fewer proportionately than state-bank failures. Let it be said that this showing as regards failures does not indicate inferiority of state banks. It shows probably that national bank supervision is better. There is in every reserve district a chief examiner of long experience, directing the work of examiners far better paid than are the state-bank examiners. Politics do not enter into the offices of these chief examiners. It has often entered into state banking departments—not that weak banks have been kept open by "influence," but that politics have too often lowered efficiency. The bankers in a number of states — South Dakota, Mississippi, and now Nebraska — have recognized this tendency by giving the state bankers a voice in choosing examiners or boards. Oklahoma did this herself some years ago, but the Governor held that his constitutional prerogative of appointment could not be thus limited. But the comparative statistics of failures do not prove one system good and the other bad. They do suggest ways to improve bank supervision, but the weak banks have been about weeded out of both systems, and the question whether to deal with a particular bank is to be determined now, as always, not by the kind of charter it has — that is of no significance — but by the character of its mnaagement.

None the less, we may take up the comparison of failures. The first table on p. 110 shows that against 75 state bank failures, with 14 reopenings, in the last three years, only nine national banks have been closed and two of them have been reopened. Some such difference, altho rarely so great, is observed in most states. The writer has not had opportunity to go so fully into the

fortunes of banks in the other states where the guaranty of deposits has been in force. But the following account of what has taken place in seven other guaranty states, while not exhaustive or final, gives data which will be well to consider it before attempting conclusions from the collapse in Oklahoma.

Kansas — Kansas adopted deposit guaranty in 1908. It will be remembered that it is optional with Kansas state banks whether to put their deposits under the protection of the Guaranty Fund or not. The figures below are from letters from the Bank Commissioner's office, ten years apart.

	June 1913		August 31, 1923	
	Number	Deposits	Number	Deposits
Guaranteed banks	472	$71,040,906	691	$181,088,518
Unguaranteed banks ..	446	42,707,937	381	63,412,082
All state banks	918	$113,748,843	1072	$244,500,600

Total capital at the latter date was $27,000,000 and surplus $14,000,000. There were 266 national banks in Kansas June 30, 1923, with $18,000,000 capital, $9,000,000 surplus and $182,000,000 deposits.

Most of the larger state banks have always seemed hitherto to consider it advantageous to have their deposits guaranteed. The relative gain in the number of banks under guaranty is partially explained by the fact that new banks have found it easier to establish public confidence by giving their depositors such protection.

Bank failures in Kansas have been comparable to those in Oklahoma. Thirty-three banks were closed from January 1, 1919 to January 1, 1923.[8] One of them closed shortly after the retirement of its president, Walter Wilson, as Bank Commissioner. Mr. Wilson has stated that because of his public duties he was compelled

8. Conversation with ex-Commissioner Foster.

to leave the management of the bank to others. Eight of the banks closed were not under guaranty.[9]

Kansas had a disappointing wheat yield this year, and corn was a failure in the southern part of the state. Many banks that had been holding on through the agricultural depression of the past three years have finally succumbed.

Twenty-three state banks (four in one week) have been closed so far this year, and four reopened. The Commissioner has adopted the policy of closing banks as soon as it appears that their case is hopeless. He believes that better reorganizations — more thoro housecleanings — can be had after they are closed than while they are open and running without public confidence.[1] No doubt he is right.

With one single recent exception,[1a] there has not been a national bank failure in Kansas for nearly ten years, a fact to be interpreted under the considerations stated on p. 120.

Some of the failures have been due to war and readjustment, some to reckless disregard of the legal limitation of borrowers' lines; and there is a distressing record of embezzlement, imprisonment and suicide. The biggest failure that ever took place in Kansas occurred this summer — the American State Bank of Wichita. The bond account was found short $1,500,000. It is said that, upon successive examinations, bonds left with the bank for safekeeping were exhibited as the property of the bank. There were excessive loans to certain oil interests, too, and the Commissioner says that the total losses will be over $2,000,000. The bank had $4,600,000 deposits, less certain offsets, and its capital, surplus, and

9. Circular Kansas State Bankers Association, July 2, 1923.

1. Conversation with Commissioner Peterson, and press dispatches since.

1a. That of the Bank of Beloit, Kansas, in November 1922. It had about $900,000 deposits.

profit accounts were $400,000. Several officers are being prosecuted.

Such a loss might wreck the Guaranty Fund, and the Bank Commissioner has a plan to reopen the bank. Citizens of Wichita have indicated willingness to subscribe 5000 shares of new capital at $400 per share, or $2,000,000, if the guaranteed banks of Kansas will agree to carry 3 per cent of their own deposits with the new bank, as part of their own legal reserve. This agreement would be for a period of five years, but could be terminated at any time if the management should prove unsatisfactory. This would give the new bank $5,400,000 of deposits to start with. Many guaranteed banks have assented to the plan. Many have not; and the impression at the middle of October was that the plan might not succeed.

The Guaranty Fund has $860,000 cash on hand, and holds $1,140,000 of bonds to secure the payment of future assessments. There are $5,500,000 of Guaranty Certificates outstanding, two thirds of which the Commissioner expects to be paid out of the assets of the failed banks themselves. Meanwhile all the certificates are drawing interest at 6 per cent if issued against non-interest bearing deposits, and in the case of interest-bearing deposits, at the rate such deposits bore — almost always 4 per cent. No certificates have been issued in the case of the American State Bank and some recent failures.[2] If it becomes necessary to issue, say, $4,500,000 in warrants in addition to the $5,500,000 already out, the interest, at an average of 5 per cent, will be $500,000 annually, this falling, of course, as liquidations proceed.

Now the annual assessments for the Guaranty Fund are one twentieth of 1 per cent of deposits. Four additional assessments, making one quarter of 1 per cent in

2. Address by Bank Commissioner Peterson, Parsons, Kansas, October 1923.

all, may be levied, provided that at the time of any levy the cash in the Fund is below $500,000. The Commissioner has been criticized for not closing receiverships, and thus depleting the Fund so as to make additional assessments possible; but he says that none are ready to be closed. Such assessments would of course be unpopular with bankers. Only one additional assessment has ever been levied. That was by Commissioner Foster in December 1922. Five assessments, the maximum, would bring in $450,000 against a possible interest bill of $500,000. This calculation is subject to many qualifications, but it suggests that the Kansas experiment in guaranteeing deposits might go the way of that in Oklahoma. Confidence in the Fund has been well sustained. A Wichita banker tells the writer that when the American State Bank failed, comparatively few depositors even went down to look in. Recently, however, the numerous failures have disturbed some depositors; and some banks, notwithstanding their deposits are guaranteed and themselves strong, observe now and then a tendency to prefer national banks.

Nebraska. — In Nebraska there were twenty-five state bank failures in 1921 and twenty-two in 1922.[3] Besides two regular semi-annual assessments of one twentieth of 1 per cent each on deposits in 1922, the banks, according to Nebraska papers, had two special assessments amounting to $2,053,762, practically 1 per cent of average deposits. Regular and special assessments together were about $2,300,000.

The following table, constructed from data in the Twenty-ninth Annual Report of the Department of Banking brings out some of the conditions arising from the failures.

3. Twenty-ninth Annual Report, Bureau of Banking, Nebraska, p. 4.

STATE BANKS OF NEBRASKA PLACED IN RECEIVERSHIP FROM NOVEMBER 30, 1920 TO SEPTEMBER 30, 1922

Number of banks placed in receivership	42
Capital	$1,406,000
Deposits (one bank not included)	8,710,981
Drafts on Guaranty Fund (10 banks not included)	5,205,915
Returned to Guaranty Fund	176,988
Cash in hands of Receivers	517,551
Assets classed as good	2,737,375
(Other assets of large amounts were classed doubtful or worthless)	
Number of banks in operation Sept. 30, 1922	963
Depositors Guaranty Fund	$2,070,930
Deposits, Sept. 30, 1922	238,209,422

With this may be compared, on the lines already suggested, the figures of September 15, 1922 made up from the reports of the national banks to the Comptroller of the Currency.

NATIONAL BANKS OF NEBRASKA

Number	182
Deposits	$200,078,000
Failures, four years ended Oct. 31, 1922	5
Gross assets of failed banks, exclusive of capital stock	$2,388,000

Professor George O. Virtue of the University of Nebraska has placed his file at the disposal of the writer. It shows that the reaction to the heavy assessments was of the same character as in Oklahoma: the state bankers procured legislation designed to lessen future burdens. The maximum of special assessments after 1923 was reduced from 1 per cent to one half of 1 per cent. A "Bankers Conservation Fund" was established, for which the banks are to be taxed not to exceed one fourth of 1 per cent of their deposits each year, and which is never to exceed one third of 1 per cent of deposits. This fund of, say, $700,000 is to be used by a

"Guaranty Fund Commission" of seven bankers to keep embarrassed banks open, with the consent of the majority owners, as going concerns, and otherwise to conserve assets. An expense fund of not over $15,000 annually is also provided for at the cost of the state banks. The Commission may keep a bank open "without regard to its solvency," until it is determined "that it is impossible to preserve such institution as a going concern." [4] Then, after certain court and departmental procedure, the Commission liquidates the bank through a receiver appointed by itself. The Governor appoints the Guaranty Fund Commission, naming one member from each of seven geographical groups. He is confined in his choice to three names in each group, submitted by the banks there. The Governor questioned these provisions for nomination and appointment, and objected to the transfer of so much state authority to a commission of bankers. However, he permitted the bill to become a law without his signature.[5]

The Nebraska provisions for aid to embarrassed banks remind one of manœuvres of the Banking Board of Oklahoma at various times in the past. Such temporizing often made bad matters worse and increased the final loss to the Fund. If, however, the Nebraska Conservation Fund can be administered somewhat like the War Finance Corporation, it will be helpful. That Corporation, it is not to be doubted, has assisted the South and West in carrying solvent but frozen credits.

The Depositors Guaranty Fund of $2,000,000 is a considerable one, and special assessments could be $1,000,000 a year. The same tendency is evident in Nebraska, however, as in Oklahoma and Kansas — the attempt to pay the depositors of failed banks in such a way as not to

4. Sec. 18, H. R. 272, which became a law April 8, 1923.
5. Lincoln (Neb.) State Journal, April 8, 1923.

involve the sound banks in serious expense. That cannot be done, at least not through times of bad business and agricultural depression.

South Dakota. — The South Dakota system went into effect nearly eight years ago, and up to June 24, 1921, there had been only three failures.[6] There were five more, however, in the year ended June 30, 1922,[7] and a little more than a year later the total had reached twenty-two.[8]

On April 3, 1923, the 561 South Dakota state banks and trust companies had $162,000,000 of deposits, over $95,000,000 of which was in time certificates or savings accounts. The Guaranty Fund was $377,000. One hundred and thirty national banks had $79,000,000 of deposits. On June 30 there was one more national bank, the state banks were fewer by five, and the Guaranty Fund had fallen to $94,000. So far depositors had been paid within thirty days after their banks failed; but some banks have been closed since, and depositors must wait until the next annual assessment of one fourth of 1 per cent is available. There is no provision for emergency assessments. Mr. M. Plin Beebe, the member of the Depositors Guaranty Commission who has kindly furnished many of the facts here cited, was not, when he wrote, informed as to the liabilities of the Fund, but thought the Commission was "about at the end of cleaning up the 'lame ducks.'" [9]

Two national banks failed in the four years ended October 31, 1922. They had liabilities, exclusive of capital stock, of $1,366,000.[1] One hundred and thirty-three

6. Report of the Comptroller of the Currency, 1921, p. 191.

7. Report of Comptroller of the Currency, 1922, p. 943.

8. Letter from M. Plin Beebe, member of Depositors Guaranty Fund Commission.

9. Letter from Mr. Beebe.

1. Reports of the Comptroller of the Currency, 1914, vol. i, p. 115; 1920, vol. i, p. 186; 1921, p. 102; 1922, p. 78.

national banks had, on September 15, 1922, $73,000,000 of deposits.[2]

North Dakota. — The situation in North Dakota was aggravated by the hostility of the state administration, during the period of Non-Partisan League control, to the "capitalistic" banking system. The disastrous experiment in "socialistic" banking, the state-owned Bank of North Dakota, is still fresh in memory. Lax supervision by the state banking department in times past is blamed for many of the recent failures. A contributing influence in some cases has been the withdrawal of deposits that had been attracted from out of the state by a campaign of advertisement of the safety of deposits in North Dakota under the guaranty system. Oklahoma banks had the same experience with such advertising ten to fifteen years ago.

According to confidential information from a trustworthy source, sixty-four state banks have been closed in North Dakota since November 15, 1920. In December 1922, the losses facing the Guaranty Fund were unofficially estimated at between $3,000,000 and $4,000,000. On September 8, 1923, there were 645 state banks and trust companies with deposits of $64,000,000, not including $525,000 to the credit of the Guaranty Fund. The maximum assessment would be about $160,000. This would not keep up the interest on the estimated liabilities. It seems another reduction to the absurd, and there are indications of a drift of public sentiment toward issuing bonds to pay off depositors of closed banks. The legislature does not meet, however, until January 1925.

Five national banks failed in the four years ended October 31, 1922. Their liabilities, exclusive of capital stock, were $1,346,000.[3] On June 30, 1923, North

2. Report of the Comptroller of the Currency, 1922, p. 378.
3. Reports of the Comptroller of the Currency as cited for South Dakota, above.

Dakota had 184 national banks with $75,000,000 of deposits.

Mississippi. — Convenient data for Mississippi were furnished by the Chairman of Bank Examiners to Mr. Herbert Holmes of Yazoo City as of May 1, 1923, and are here summarized. Twenty-one state banks have failed since the Guaranty law went into general effect in 1915, and fourteen of the failures came in 1921 and 1922. The maximum assessments, one quarter of 1 per cent per annum, were levied both years. One fifth of 1 per cent (in 1919) had been the highest previous levy. From the establishment of the system to the end of 1922 the banks paid into the Fund $884,000, and about one half of this in the last two years. It has taken $817,000, net, of these collections to pay the depositors in those banks only, nine in number, that failed down to March 12, 1921. In these cases the Guaranty Fund paid out $1,006,000 and recovered to May 1, 1923, $189,000, leaving $80,000 in cash on hand; and it was estimated that the remaining assets of the nine banks were worth $163,000. Against these assets of $243,000 the Fund was liable for $1,683,000 of the deposits of the other twelve failed banks, and perhaps in addition for $428,000 of their public deposits and deposits otherwise secured, whose legal status had not been determined when these figures were published last May. The Chairman of Bank Examiners estimated the losses to be made good by the Guaranty Fund at $1,035,000. Deducting cash and other assets as above, $243,000, there was an estimated deficit of $792,000. The maximum assessment would bring in about $210,000 per annum.

The writer assumes that about $40,000 would be required annually for interest on the liabilities of the Fund, and that the Fund could therefore get out of debt in four or five years, if there were no more failures.

One national bank failed in Mississippi during the four years ended October 31, 1922, and it was afterward restored to solvency. There are 31 national banks in the state (June 30, 1923) with $43,000,000 deposits.

Bank examiners in Mississippi have been elected by popular vote, a procedure criticized by the writer at the time the law was adopted.[4] The Board of Bank Examiners is to be supplanted at the end of this year by a Superintendent of Banks, to be elected by the state banks themselves. It will be important to see if this method results in better administration than in other states, where the governor makes the appointments.

Washington. — The guaranty of bank deposits broke down in the State of Washington because one big bank failed — a danger frequently pointed out in discussions of the operation of the system in other states. The total deposits of 298 state banks in 1921 were $155,000,000, and over $10,000,000 of this was in one institution, the Scandinavian-American Bank of Seattle. It closed, the largest bank in the system; and, guaranty in Washington being optional with the banks, all in the system withdrew.[5] Mr. C. L. Nelson, who is in charge of the Guaranty Fund Department as Assistant Secretary of the Banking Board, writes that these banks took "their losses of one and one half per cent of their average eligible deposits." "There are now," he states, "no banks operating under the Guaranty law, altho we have several banks that withdrew prior to the failure of the Scandinavian-American Bank whose liabilities to the fund are being determined in the courts." Fifty per cent, $4,240,935, has been paid on warrants drawn on account of the Scandinavian-American Bank failure. There will be some further realization from its assets. Mr. Nelson

4. Quarterly Journal of Economics, 1914, vol. xxix, p. 419.

5. See the account of this episode by Mr. H. H. Preston in the Quarterly Journal of Economics, February 1922, vol. xxxvi, p. 350.

continues: "We do not anticipate that the warrants will ever be paid in full, altho we hope they will be paid up to seventy or eighty per cent of their face value. The guaranty of deposits in this State has been 'tested and found wanting.'"

Texas. — Texas has been reserved for discussion last of all, because, if there is a way to maintain the guaranty of bank deposits, Texas has that way. The Bank Commissioner, Mr. J. L. Chapman, has sent to the writer a statement prepared by Mr. W. L. Peterson, Deputy Commissioner, for publication in the *Guaranty Fund Bulletin of Texas*. Except for the introductory paragraphs the paper is here quoted in full.

Up to November 1, 1920, the State Bank failures had been few and far apart, subsequent to the enactment of the Guaranty Fund law. But following the World War, the general depression caused a number of banks to fail; therefore, in order to distinguish between the normal and the abnormal periods I shall submit the statistical data separately.

From January 1, 1910 to November 1, 1920, nineteen Guaranty Fund Banks failed. For the purpose of paying the non-interest bearing and unsecured depositors of these banks, $881,594.85 was withdrawn from the Guaranty Fund. Up to this date, $570,971.88 of the the $881,594.85 has been returned to the Guaranty Fund Banks through the medium of dividends; therefore it will be evident to you that the Guaranty Fund Banks sustained a loss of approximately $310,622.97 for that period. Practically all of the assets of the nineteen failed banks have been disposed of; therefore it may be safely said that the $310,622.97 is approximately the entire loss sustained by the Guaranty Fund Banks during the first ten years of the operation of the Guaranty Fund law. This was an average cost of $50 to each member bank per year.

From November 1, 1920 to date, $9,460,106.77 has been withdrawn from the Guaranty Fund to pay the non-interest bearing and unsecured depositors of sixty-one failed banks. To date, $1,790,-147.90 of the $9,460,106.77 has been returned to the Guaranty Fund in the form of dividends.

This Department now has in its hands for liquidation a large number of assets belonging to the various sixty-one defunct banks, out of which we are sure to realize at least an additional $1,750,000, and perhaps $2,000,000 or $2,250,000.

It will be apparent to you, then, using the above figures as a basis, that the Guaranty Fund from November 1, 1920 to September 15, 1923, has stood a loss of between $5,000,000 and $6,000,000.

As a matter of comparison, it can then be said that during the normal period above referred to, the Guaranty Fund stood an average yearly loss of approximately $31,000; and during the financial depression stood an average yearly loss of approximately $2,000,000.

In other words, during the depression which followed the World War, the Guaranty Fund Banks of Texas sustained losses of approximately $6,000,000, which otherwise *would have been lost by the depositors.* [Italics in the original.]

After emerging from the terrible financial catastrophe the Guaranty Fund remains intact, as sound as the Rock of Gibraltar, and generally speaking, the morale of the member banks is excellent. At the present time there is in the permanent Guaranty Fund Account, approximately $3,250,000. The Banking Commissioner is empowered by law to levy a maximum assessment of 2 per cent of the average daily deposits of the combined Guaranty Fund State Banks of Texas, for the purpose of paying the non-interest bearing and unsecured depositors of the failed Guaranty Fund State Banks. The combined deposits of the State Banks of Texas are approximately $300,000,000 under normal conditions; therefore it will be seen that, in addition to the $3,250,000 now in the possession of the State Banking Board as a reserve fund, in case of an emergency, approximately $6,000,000 is available annually at the instance and call of the Commissioner to care for eventualities.

Bankers of other systems are advancing the argument that the assessments have been so heavy in past years that it has weakened the member state banks. Such an allegation is untrue. It is a fact, however, that during the past three years the member banks have had to contribute an appreciable portion of their profits in payment of the assessments levied against them. It should be borne in mind, however, that the last three years have been exceedingly abnormal. The average annual loss sustained for the past thirteen years would be reasonable, and may we not, after profiting by the experiences of the past, hope to materially reduce the number of failures for the next thirteen years?

Not one non-interest bearing and unsecured depositor ever lost a cent in a Guaranty Fund Bank of the State of Texas, even tho we have passed through the darkest period of the financial history of the State. [Italics in the original.]

It has been said that, comparatively speaking, there have been too many State Bank failures. Please bear in mind that there are now 961 State Banks in the system. Before the depression there were over 1,000. There are about twice as many banks in the state

system as in any other system; therefore it is reasonable to presume that the failures would be proportionately larger. As a matter of right and wrong, should not the farmer who has earned his money by the sweat of his brow be entitled to complete protection when he deposits his money in a bank? Has not a widow or minor children, who have come into possession of insurance money through the death of their husband or father, a moral right to 100 per cent protection when their funds are trusted to the use of a corporation which thrives on the public? They are uninformed as to the solvency of banks. The principle of the Guaranty Fund will in future years come increasingly more in favor in the eyes of the general depositing public.

The author of the foregoing seems to suggest a comparison of state and national bank failures. It is rather less adverse to the state system than in the other states we have here discussed. Data as to losses sustained by Texas depositors in national banks are not at hand, but the sixty-one state bank failures may be compared with twelve national banks closed from November 1, 1920 to October 31, 1922. Two of these banks were restored to solvency. The liabilities of the others, exclusive of capital stock, were $7,217,794.

According to the most recent statement the writer has, the capital of Texas state banks and trust companies is about $45,000,000, their surplus about $13,000,000, and deposits $218,000,000. A tax of $6,000,000 annually, which the Deputy Commissioner suggests as possible, or even the $4,360,000, which might be levied on the smaller deposits just stated, would of course be so terrific as to drive all banks out of the state system that could get into the national. The burden even now is not lightly borne. A friend whose national bank has taken over two state banks tells the writer that he found more than 25 per cent of their capital and surplus "invested in the Guaranty Fund." There will of course be some recoveries as the Fund realizes on the assets of failed banks respecting which the assessments were made.

Notwithstanding the severity of the losses, Texas has found the only way to keep up the guaranty of bank deposits, if there is any way at all. The State is, so far, collecting adequate premiums to cover the guaranty, and is maintaining a considerable reserve.

There have been failures, of course, in states that never adopted deposit guaranty. From January 1, 1920 to the middle of August 1923, 27 state banks closed in Missouri and did not reopen. This is a good record, for Missouri has about 1500 state banks. Mr. J. G. Hughes, Commissioner in 1921–22, and his successor, Mr. F. C. Millspaugh, have been persistent and skillful in inducing directors of weak banks to "guarantee" deposits. This has enabled many banks to continue, that must otherwise have closed. Eleven state banks closed in Arkansas and 26 in Colorado. Whether any reopened, the writer is not informed. In any case, each of these three states had fewer state bank failures than any of the three neighboring states of Oklahoma, Kansas, and Nebraska. It is impossible to offer strict proof that the guaranty of bank deposits had anything to do with the difference. Climatic vicissitudes, economic conditions, and reserve wealth vary, of course. The difference in failures comes to mind, however, when one hears a story such as that of an Oklahoma banker who explained his acceptance of a hazardous grain account by saying that the apparent profit was large, and that his depositors, being guaranteed, could not suffer anyway. Few bankers would be so frank, and it is probably not often that banks fail from such deliberate recklessness.

No one, however, can review the events narrated in this article without seeing that bank casualties in plenty have come from the fact that many inexperienced, many incompetent, and some crooked men have got into the

banking business and have attracted deposits they never would have received if deposits had not been guaranteed. Such bankers have outbidden sound bankers for accounts by granting credit on insufficient security or none. It was easy in the flush times to build up impressive deposits in that way. But now many of these bankers have lost their banks and their honor, and their depositors hold warrants against abandoned or delinquent guaranty funds. In other words, if you guarantee deposits, lots of bankers lean on the guaranty, and fall.

The writer has stated in this Journal more than once the general arguments that appear to him important in the discussion of deposit guaranty and related problems of the establishment and administration of banks.[6] Some of these arguments must be repeated here, tho in summary form.

Does the tendency of deposit guaranty to promote bad banking finally dispose of all arguments for the system? Almost all bankers say yes. They resent bitterly the taxation of good banks to pay the losses of bad. These two objections are inherent, of course, in all insurance. Every careful, honest merchant is paying with his fire-insurance premiums for the losses of his careless or criminal competitor.

Let us pause to consider this analogy. It is at many points exact; for instance, as regards the increase of hazard due to insurance. Almost any banker can tell you, if he will, of fire after fire that has occurred just after he has declined to lend money on a weak statement. There are no statistics of arson, but we know the terrible increase of fire losses in times of depression.

Deposit guaranty is of course simply deposit insur-

6. See Quarterly Journal of Economics, November 1909 and February 1910 (these two reprinted, under the title, "State Banks and Trust Companies since the Passage of the National Bank Act," in the Publications of the National Monetary Commission); November 1913; February 1915; November 1921.

ance. Some bankers, confused by the fact that the depositor does not pay the premium or tax, say that it is not insurance at all; but of course it is insurance, whoever pays the premium. Probably these same bankers are buying insurance policies, called bonds, for certain large public accounts, and paying the premiums themselves.

The objections to deposit guaranty are qualitatively the same that inhere in most forms of insurance, and guaranty cannot be dismissed from consideration unless it can be proved that there is no public need of such insurance, that the losses and expenses of the insurance exceed the benefits of it, and in the latter case that there is no way of lessening losses enough to make the insurance practicable.

No one can ever have observed the distress, the thwarted hopes, the twisted lives that bank failures cause, without wishing there were some way to make the depositors whole. Bankers are apt to say that deposit guaranty is not practicable without efficient bank supervision, and that then it is unnecessary. That does not follow. Altho the losses, averaged for a period of years, are small indeed, the writer would say again, quoting from his first article on the subject:

> The statistics that prove how comparatively rare bank failures are and how infinitesimal the ultimate loss is, are not valid as a measure of the blighted ambition and the "wreck of happiness" that follow the closing of banks. . . .
>
> Now, this loss, while infinitesimal, deters a great many people from depositing in banks, for the reason that people do not know what institutions will fail. It is suggested, of course, that such a fear is unreasonable. "Let the people pick out good banks to do business with," say the opponents of deposit insurance. But in too many cases the people cannot pick good banks. Not only in the country, but in the city, a large number of people have not and cannot get the necessary information to enable them to determine whether a given bank is good or not. A few banks stand out in their communities

preëminent for strength and conservatism, but these cannot do all the business, and every now and then one of these very institutions fails. To say nothing of laborers and small tradesmen, even the great business man usually knows only by general reputation whether a bank is good or not. He cannot know of all of the bank's investments. Altho in touch with the affairs of the community, he is dependent on current gossip for any details he may chance to learn of those transactions that impair a bank's solvency.

The closing of any bank is a surprise to the very directors. Few of its depositors can have had any reasonable chance to learn anything about it. Whom could they have asked? The directors? They were deceived themselves. The big business men of the city? If they had their misgivings, they would not have communicated them. Did they inquire as to the general reputation of the management, the answer would almost invariably be, "reputation all right." The crash of failure comes upon the depositor almost always without his having had personal warning or any practical opportunity to obtain it. Tho there may be little active demand for bank-deposit insurance (it is a novel matter anyway), it is not true that there is no need for such insurance. The advisability of giving the holder of a bank's notes protection additional to that afforded by the particular bank has long been recognized. Until comparatively recent times the liabilities of banks were chiefly notes. Now the liabilities are chiefly book credits — deposits. It may be time that depositors should cease to be dependent upon the fortune of a single bank in a single place.[7]

There is, then, a need which everybody would like to see met if it could be met with safety to our banking system and to society. It is a need so real, and the dangers if it is not met are so great, that sometimes it is met voluntarily, and the solvent members of a clearing house will save the depositors of an insolvent member. Tho the operation is expensive, the loss of public confidence from a bank failure would, it is calculated, be greater than the money paid out to meet the obligations of the fellow member. This happened in Chicago in 1907; it has happened in other cities since.

It must be agreed, however, that the experience of Oklahoma with state-administered deposit insurance

7. Quarterly Journal of Economics, February 1910.

raises a presumption, reinforced by the course of events in some other states, that the condition above postulated does exist; that the losses under deposit insurance as it is now practised exceed the benefits. Such losses becomes, in fact, an intolerable burden on solvent banks, and sometimes a positive danger to depositors who would not otherwise be involved.

There remains, then, only the last question, whether there is any way of lessening the losses enough to make deposit insurance practicable. Obviously it is not worth while to establish insurance that will not pay the losses in war and peace, through good harvests and bad. The insurance must be dependable, or we shall miss the economic gain of it—full confidence in the integrity of deposits at all times, and consequently never a bank panic. Except perhaps in Texas, there is such reaction by the bankers against the taxes necessary to maintain the guaranty of bank deposits as to make the future of the guaranty system too precarious for practical reliance.

Unless, indeed, the losses can be cut down and kept down. That would require bank supervision comparable to that of the Comptroller of the Currency, and an enforcement of the criminal laws like that of the Federal courts. This suggests the possibility of the guaranty of national bank deposits, but that experiment must not be undertaken. Leaning on the guaranty might break down national bank supervision and Federal law enforcement. It is traditional now that one who seriously violates the United States criminal law (except, for the time being, the Volstead Act) is in grave danger of his liberty. National bank supervision is helped by the tradition that one must not trifle with the Federal government, even by making excess loans. The State Bank Commissioners would have tasks far easier if they had the same tradition behind them, especially in guaranty

states where the fact, so long as it is a fact, that depositors have suffered no loss, deadens the public opinion necessary to the successful prosecution of criminal bankers.

Here we meet issues of government much too wide for present discussion; but their final determination, when it comes, will be decisive of the feasibility of deposit guaranty. Texas should, perhaps, be excepted from our present judgment, and someone should study its experiences in full detail. In the other states, at least, that have attempted the guaranty of bank deposits, there does not now appear either such regard for law because it is law, or such provision for the payment of bank losses, as would make probable the permanence of deposit guaranty.

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REVIEWS

TAYLOR'S PRINCIPLES OF ECONOMICS[1]

It is not an easy matter for one teacher to dogmatize about the usefulness or otherwise of the methods which experience has commended to another. Still less easy is it for one who has ceased for a number of years to practise the art of teaching to cavil at features which do not commend themselves to him. In the case of Professor Taylor's treatise, the very excellencies of the general treatment of the subject, which cannot but strike the readers of his volume, furnish reasons for careful consideration of certain important features in respect of which he appears to have adopted a course of exposition open to challenge. That his presentation of the subject is unquestionably calculated to stimulate students using his text to think out for themselves the inter-relations of economic forces commends his book to the critic. The central body of doctrine presented in its pages is thoroly sound, and his long experience has enabled him to appreciate the nature of the difficulties commonly encountered by students of economics and to encourage them to face those difficulties frankly and boldly. He offers solutions of many knotty problems, in a manner calculated to encourage his readers to penetrate more deeply into the realities of the situation and not rest content with simple formulæ repeated parrot-fashion. For all this, and much more that might be added in the same sense, those who have entered on the study of economics under his guidance will owe him a debt of gratitude. The book presents the results of many years of experience, its form being the outcome of numerous corrections and revisions, as is explained in the preface.

In offering to a wider public than those who have attended his lectures the results of his lecturing experience, Professor

1. Principles of Economics, by F. M. Taylor, Ph.D., Professor of Economics, University of Michigan. The Ronald Press Company, New York, 1921.

Taylor challenges comparison of his methods with those of others, and the present writer, tho strongly attracted by much that is presented with refreshing clearness and admirable frankness, feels unable to refrain from raising, in respect to features of considerable importance in the general presentation of the material, some doubts as to the procedure followed.

The first of these is a technical matter, relating to the treatment of the price-determining factors resulting from the conditions affecting demand and supply. In two different respects the method adopted may be considered open to criticism. In dealing with the variation of the quantities which, as price varies, are offered or demanded respectively, illustrative figures are given which, in some cases, show quite accurately that the changes in these quantities consequent on a given absolute (or relative) change of price are by no means uniform at all price-levels. In spite of this, the diagrammatic presentations (and the tabular statements directly represented in the diagrams) with few exceptions treat the problems on the basis of equal changes of quantities offered or demanded for equal changes of price, whatever the actual price-level from which such change occurs. It appears by no means improbable that, by thus encouraging students to treat all demand and supply curves as straight lines, a habit of thought may be developed which will prove a serious obstacle to a correct analysis of some, at least, if not of many, of the problems in the solution of which it is desired to train them. The use of such "straight-line" diagrams should surely be made to lead up to the greater reality which cannot be approached without introducing the curves that correspond to actuality. That we are, in general, ignorant of the precise shape that should be given to the curves cannot be taken as a justification for wholly ignoring their curvature.

There is another feature of this part of the analysis which the author regards as of fundamental importance. He discusses with much elaboration the influence of what he describes as the marginal supply and demand prices and the first extra-marginal supply and demand prices. The introduction of these conceptions appears to depend on regarding

prices as capable of variation only by finite steps; and tho, for illustrative purposes, it may be useful to begin with the conception of prices moving by uniform finite amounts, it is surely more than possible that actual variations of fractions of the amount selected as the unit of variation, or of multiples, other than exact integral multiples, of that amount, may be encountered. The imagination finds no difficulty in conceiving of them, and experience may readily fortify imagination in this matter. To treat by the method of finite differences problems for the thoro solution of which the infinitesimal calculus is required cannot be regarded as wholly satisfactory. It is one thing to commence the exposition with finite steps, but it is quite a different thing to evolve an elaborate doctrine, which loses all its force and value if the steps of variation are not kept finite.

Whatever of unreality may be involved in treating variation as continuous, the definite framing of elaborate explanations of the price-fixing factors, based on the hypothesis that the variations are essentially discontinuous, appears to the present critic to be a blemish on what promised otherwise to be a remarkably sound and helpful exposition. Had the author even gone so far as to state that, when the variations are discontinuous, the determination of price takes place within the limits indicated by him, but that the hypothesis of continuous variation makes the four limiting values coalesce into one, the criticism now offered would have lost most of its force. The application of mathematical conceptions in economics may easily become harmful rather than helpful if those conceptions are handled in the manner of a stranger to mathematical analysis. As has been well said by a great English teacher, the use of mathematical symbols in economics — and the same is in a large degree true of such methods as are illustrated in the matter now criticized — is to be found in the assistance they afford, to those skilled in mathematics, in following out a course of logical argument, rather than in the aid they render to those not familiar with mathematical modes of thought in grasping an argument presented in more or less mathematical form.

The second matter of principle on which the present writer ventures to express a judgment different from that of Professor Taylor is the decision to include, in the same volume in which the student is introduced to the analysis of economic facts and processes, a deliberate critique and defense of the existing industrial system. The author is, as he shows, well aware that, in making his choice in favor of this course, he goes beyond what some consider to be the proper limits of economic science. We should rather say that the important discussion of the question whether the existing order can be justified would be much more conveniently and appropriately handled in a treatise dealing especially with that topic, in which some considerations might well be introduced which would be rather out of place in chapters annexed to an introductory textbook on economic science. Neither the scientific analysis nor the critique of the existing system seems to us to gain by being included in one and the same introductory study. The inclination must be admitted to jump from an analysis of the inter-relations of different features of our existing system to the question whether that system justifies itself by its results. But that question appears to need the consideration of other matters than those with which the scientific economic analysis is concerned, and matters of a wholly different order. To deal with it satisfactorily, it would be preferable to attack the problems in a treatise — or series of lectures — concerned primarily with these problems, and addressed to students whose previous studies had included the scientific analysis without which these problems cannot be adequately discussed. While impatient students desire to hasten over the preliminaries and get to the discussion of the best way of reconstructing the world, it may prove a very doubtful advantage to offer them, in their introductory course, the discussion of whether such a reconstruction is or is not desirable.

It will be observed that the challenge to Professor Taylor's choice of procedure is not based on whether an economist is justified in discussing the group of problems in question, or whether that discussion may properly be included in an

elaborate advanced study of economic principles, but on the decision to crowd this discussion into an introductory course of economic analysis, rather than to defer it for more detailed and deliberate treatment for students whose grounding in economic analysis is assumed to have been separately provided for. Perhaps this line of criticism may appear somewhat extreme, but the reading of Professor Taylor's textbook left on the mind of the present writer the impression that students would be apt to be concerned with the last sixty pages rather than with the first five hundred, and that there would be a tendency to view the abstract discussions occupying the bulk of the volume from the standpoint of the chapters with which it concludes, and to the detriment of the excellent work represented in the first forty-one chapters.

An illustration of an inconvenience of the choice made may, perhaps, be found in the treatment of money. We might ask whether it is satisfactory to present a justification of the present economic system based on the assumption that that system involves, as a part of its mechanism, a standard money redeemable in gold. Does not this limit the justification of the present economic system of the world rather narrowly? A world which for the most part is struggling along without redeemable currencies lies outside the range of the discussion. It might have been preferable to devote the space consecrated to the justification of the existing order to an extended study of money, so as to cover cases in which the redeemability in gold, with which residents in the United States are familiar, was not realized, as it is not generally realized at present in the world at large. Even at the date of the issue of Professor Taylor's book, this feature of world-affairs could hardly be overlooked by careful observers; and subsequent experience has emphasized the difficulties of dealing with the situation created by the monetary chaos afflicting so many countries whose economic structure is in other respects of an advanced type.

Regarding one other feature of the treatment of the subject the point of view presented leaves something to be desired. In introducing his students to the concept of capital,

Professor Taylor, like other writers, dwells on the fact that capital enables stocks to be carried, and slowly ripening services to be waited for. While this is undoubtedly true and useful, the emphasis on the passive side of capital services hardly represents the true difference between production with much capital and production with little capital. The fact is that, given the requisite supply of capital, processes of production can be adopted which, while involving in some cases a longer interval between inception and completion than less capitalistic methods, are more effective because they enable natural advantages to be utilized or obstacles evaded. While a certain quantum of "waiting" is required, it is not merely passive waiting; and in the examples selected in this book, the attention of students is too markedly directed to mere passive waiting, and not enough to the technical efficiency of productive processes which can be achieved when a supply of capital is at the disposition of the community. In particular, it does not appear satisfactory to insist that, in using durable instruments of production the services of which mature regularly over a prolonged period of time, the greater part of the capital is "idle" during that time. Even in the case of a plantation of trees, containing sections which, year by year, will become ripe for cutting and will be replaced by new plantings, it is surely not an accurate representation of the facts to describe all the plantation except the section currently yielding timber as "idle."

Happily this defect in the initial presentation of the nature and sources of capital has less influence than might have been supposed on the discussions which follow regarding value, cost, and the division of the value of products among the contributors to their production. It may be added that the point at issue is not the difference between a treatment of "capital goods" and a discussion of "capital." There is some danger, however, of overlooking the real nature of the capital problem if the discussion of "capital as capital" gets too far away from the concrete forms in which capital is embodied.

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REED'S DEVELOPMENT OF FEDERAL RESERVE POLICY [1]

ALTHO it is over eight years since the Federal Reserve banks began operations and almost ten years since the Federal Reserve Act was passed, this is the first book that undertakes an analysis of the manner in which our central banking system has thus far carried out the purposes that called it into being. Indeed, for a work of the kind to have real value, it is probably essential that there should have been a considerable lapse of time before the analysis was attempted. Previous books in the field, such as those by Conway and Patterson, Dr. H. Parker Willis, Professor E. W. Kemmerer, C. W. Barron, while useful in their way, never pretended to be more than descriptions of the organization of the reserve system; and all were written too early to give critical accounts of the policies that have been pursued. It is also a happy incident that the present work should have been written by a professor of banking and finance from a university in the Middle West. The fact that the author is located in the midst of the great agricultural area of the country, — a section from which the bitterest attacks have been made on the policies pursued by the management of the Federal Reserve banks and the Federal Reserve Board, — and that he has had no personal contact except that of a student of finance, makes his point of view of unusual significance and value. The time is also most opportune for a book of this character, for, as the author states, many misconceptions are current regarding the nature and purposes of the Federal Reserve banking system, not only in the minds of the people at large, but also, it must be admitted, in the minds of many of our public officials.

Professor Reed states in his preface that the book was published for the general reading public rather than for classroom purposes, but that it may serve also as a second book to follow the reading of the elementary texts in college courses in

1. The Development of Federal Reserve Policy. By Harold L. Reed. Pp. 352. Boston: Houghton Mifflin Co., 1922.

money and banking. It should be said at once that it appears to meet both qualifications. It presents in an interesting manner the story of the reserve system since its inception; points out that the Reserve banks have been operating under unusual conditions, because of the exigencies of the great war, and that the degree of development under these conditions was satisfactory; but points out also that the permanent criterion of their usefulness must be found under normal peace conditions. Altho it deals with many technical matters, such as check collection, the eligibility of loans, the use of credit, and the like, it is written in a simple style, and is free from the usual technical terms.

It is of some significance that the author feels that the development of the Federal Reserve's par collection should be given a position of prominence. In the first chapter of his analysis of the reserve system, therefore, he shows the great value which the free collection of checks has had for the business of the country, by practically ridding our banking system of the unsound custom of indirect routing of checks, and, to a large extent, of the exchange charge: evils which have been almost forgotten except by a minor section of the country, where a small majority of state banks are still fighting to maintain that the exchange charge on checks is a proper banking charge. He also recognizes the importance of the gold settlement fund, of which he says that "it is impossible to stress too highly its functions in enabling to run smoothly the mechanism of domestic exchange."

One of the most interesting chapters is that dealing with agricultural credits. Here it is explained that the need of the farmer has been for a longer credit than that which either the Reserve banks or the member banks should be called upon to extend, because the member banks of the Federal Reserve system are for the most part commercial banks, carrying with the Federal Reserve banks a balance which is largely a reserve against demand deposits. In considering the provisions of the Federal Reserve Act, Professor Reed is impressed by the fact that the Federal Reserve Board has gone to the limit in making a liberal interpretation of the provisions dealing with agri-

cultural credits. He reaches the conclusion regarding discount rates (p. 148) that it is difficult to convict the Federal Reserve Board of any failure to recognize the legitimate needs of agriculture, and points out (p. 152) that most of the feelings engendered in the agricultural sections were caused by "passing of the buck" by the local banker, when further loans were refused, to the shoulders of the Federal Reserve banks, and also by a general lack of understanding of the emergency character of the Reserve system. Professor Reed evidently has made a careful study of the credit problems of the agricultural districts, and his familiarity with the needs and points of view of that section has enabled him to study the question dispassionately. His conclusions on the subject therefore should be accepted as high authority, especially in reference to the manner in which the Federal Reserve Board met the problems that faced it in dealing with the situation as it affected the great farming sections of the country.

The last half of the book is given to discussions of the policies adopted by the Federal Reserve management with respect to the problems which developed from year to year from the time the Reserve banks began active operation. The analyses of these problems are clear and the author's conclusions and criticisms are sound. The chapter on the period of post-war credit expansion gives a lucid and concise account of the factors entering into that phase of the business cycle. He fails, however, in his criticism of the policy governing Federal Reserve note issues (p. 306), to offer any satisfactory solution of the problem how the increase of Federal Reserve notes during that period could have been overcome otherwise than by the paying out of gold or lawful money by the Reserve banks. If, as he states, "the underlying theory of Federal Reserve note issues was that the note should be emitted under regulations very similar to those governing deposits," such a criticism is most important, and one which those directly interested in the welfare of the Federal Reserve system should take immediately to heart by making it the subject of most careful study and investigation.

There is good reason to believe that few persons, other than

those connected with the Federal Reserve banks, understand either the conditions under which Federal Reserve notes are emitted or retired by Federal Reserve agents and by Federal Reserve banks, and therefore there has been much confusion as to the control by the Federal Reserve banks of their note issues. The provisions of the Federal Reserve Act, in reference to the issuance of Federal Reserve notes, as first enacted, were that "any Federal Reserve bank may make application to the local Federal Reserve agent for such amount of the Federal Reserve notes hereinbefore provided for as it may require. Such application shall be accompanied with a tender to the local Federal Reserve agent of collateral in amount equal to the sum of the Federal Reserve notes thus applied for, and issued pursuant to such application. The collateral security thus offered shall be notes and bills, accepted for *rediscount* under the provisions of Section 13 of this act. . . . Every Federal Reserve bank shall maintain reserves in gold . . . of not less than forty per centum against its Federal reserve notes in actual circulation, and not offset by gold or lawful money deposited with the Federal Reserve agent. . . . The Board [Federal Reserve Board] shall have the right, acting through the Federal Reserve agent, to grant in whole or in part, or to reject entirely, the application of any Federal Reserve bank for Federal Reserve notes; but to the extent that such application may be granted the Federal Reserve Board shall, through its local Federal Reserve agent, supply Federal Reserve notes to the banks so applying, and such banks shall be charged with the amount of such notes, and shall pay such rate of interest on said amount as may be established by the Federal Reserve Board. . . . Any Federal Reserve bank may at any time reduce its liability for outstanding Federal Reserve notes by depositing with the Federal Reserve agent its Federal Reserve notes, gold, gold certificates, or lawful money of the United States. Federal Reserve notes so deposited shall not be reissued, except upon compliance with the conditions of an original issue."

There are two points to be noted: first, that the collateral security under the original provision could be only notes and

bills accepted for rediscount under the provisions of Section 13 of the Federal Reserve Act; and second, that the Federal Reserve bank must maintain reserves in gold of not less than 40 per cent against its Federal Reserve notes in actual circulation, and not offset by gold or lawful money deposited with the Federal Reserve agent.

There was some ambiguity regarding the interpretation of these provisions of the Federal Reserve Act dealing with note issues, and also with the exchange of Federal Reserve notes for gold which was found to be desirable in the early days of the war. This difficulty was met by the Federal Reserve banks depositing discounted paper with the Federal Reserve agents, obtaining notes, and then withdrawing the paper by deposit of gold; thereupon repeating the process with the paper. But when the Federal Reserve Act was amended on June 21, 1917, the following provision was adopted in reference to note issues:

> The collateral security thus offered shall be notes, drafts, bills of exchange, or acceptances acquired under the provisions of section thirteen of this act, or bills of exchange endorsed by a member bank of any Federal Reserve district and purchased under the provisions of section fourteen of this act, or bankers' acceptances purchased under the provisions of said section fourteen, or gold or gold certificates; but in no event shall such collateral security, whether gold, gold certificates, or eligible paper, be less than the amount of Federal Reserve notes applied for.

The amended section provides also that when the Federal Reserve agent holds gold or gold certificates as collateral for Federal Reserve notes issued to the bank, such gold or gold certificates shall be counted as a part of the gold reserves which such bank is required to maintain against its Federal Reserve notes in actual circulation.

Altho the law still required that "such bank shall be charged with the amount of notes issued to it, and shall pay such rate of interest as may be established by the Federal Reserve Board on only that amount of such notes which equals the total amount of its outstanding Federal Reserve notes less the amount of gold or gold certificates held by the Federal Re-

serve agent as collateral security," no such rate of interest has ever been established by the Federal Reserve Board, and therefore the notes have been turned over automatically as the needs for currency of the member banks developed. There has been the impression in the minds of some that this interest charge called for in the act would be passed along to the member bank; but the practical working of issuing notes is such that the notes when issued go direct to the Federal Reserve bank and do not necessarily go to the member bank in payment of a rediscount. For instance, a member bank, when asking for a rediscount and creating a balance, may avail itself of that balance either by calling for currency that it may receive in the form of Federal Reserve notes, or it may check against that balance, in which event Federal Reserve notes might ultimately be paid out to other member banks. Also, under the interpretation of the act, the rediscounts made by one Federal Reserve bank for another Federal Reserve bank can be used as collateral for Federal Reserve notes; so that the Federal Reserve bank might issue Federal Reserve notes to its member banks where those member banks had not themselves rediscounted, the collateral security being paper rediscounted by member banks in other Federal Reserve districts. The practical working of the amendment of 1917 has been that all notes, drafts, and bankers' acceptances received by the discount department of a Federal Reserve bank, whether these consist of rediscounts for their own member banks, rediscounts for other Federal Reserve banks, or bankers' acceptances purchased in the open market, have at once been turned over to the Federal Reserve agents of the Federal Reserve banks as collateral for Federal Reserve notes. While the gold deposited with Federal Reserve agents has always been at least 40 per cent (and most of the time largely in excess of that percentage) the amount turned over to the Federal Reserve agents has been largely a matter of convenience — the result neither of any settled policy nor of compliance with statutory provisions, since the Federal Reserve Act does not specify where the refunded reserves shall be carried. The result is that the gold held by the Federal Reserve agents

varies to a wide extent, some Federal Reserve banks maintaining with their Federal Reserve agents only the 40 per cent gold reserve which they must carry somewhere, while others Federal Reserve banks maintain with their Federal Reserve agents an amount largely in excess of the actual notes issued. Inamuch as the reserve provisions of the act do not require the Federal Reserve bank itself to maintain two separate reserves, one against its notes outstanding and the other against its deposit liability, the gold deposited with the agent and the gold and lawful money held by the bank itself have been combined for purposes of arriving at a single percentage against all liabilities, which is the figure customarily published. It would appear therefore that the Federal Reserve banks, save only as they do not discount or invest their funds, have no control of their note issues, the volume of issues being dependent upon the demands of their member banks for currency. If, as some maintain, the increase of this circulating medium is the cause of high prices rather than the high prices being the cause of an increased demand for these notes, some more adequate means of control than has yet been developed should be worked out.

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RECENT BOOKS ON BUSINESS CYCLES[1]

ONE of the clear results of the extraordinarily severe depression of 1921 was the output of a large volume of literature on the subject of business cycles in their economic and social aspects. In the last thirty years, only the crisis and depression of 1907–08 have been comparable with those of 1920–21 in severity. Following 1907, interest centered chiefly on the defects of our banking system; but with the Federal Reserve Act in operation in 1920, and with the basis for investigations broadened by the foundations that have been laid by investigations in the intervening period by such students as Wesley C. Mitchell, it is not surprising that the literature of the last three years has covered a much wider field than did that of fifteen years ago.

The seven books which are here to be reviewed are for the most part utterly different in character and in scope, as well as in quality. The most significant of these books are *Business Cycles and Unemployment* and *Waste in Industry*. The latter, which, to be sure, does not treat of the business cycle as such, will concern us first.

"The wastes revealed," says the introduction, "are the result of methods, tactics, practices and relationships of long standing in industry, and the committee has merely desired to indicate the main opportunities for eliminating waste and to show whose opportunity or responsibility it may be to adopt proper methods for such elimination." Responsibilities are

1. Business Cycles and Unemployment. Report and Recommendations of a Committee of the President's Conference on Unemployment. Pp. xl, 405. New York: McGraw-Hill Book Company Inc., 1923.

Waste in Industry. By the Committee on Elimination of Waste in Industry of the Federated American Engineering Societies. Pp. vii, 409. New York: McGraw-Hill Book Company Inc., 1921.

The Stabilization of Business. By Wesley C. Mitchell and others. Edited by Lionel D. Edie. Pp. xii, 400. New York: Macmillan Company, 1923.

Risk and Risk-Bearing. By Charles O. Hardy. Pp. xix, 400. Chicago: The University of Chicago Press, 1923.

Business Forecasting. By David F. Jordan. Pp. xv, 270. New York: Prentice-Hall Inc., 1921.

The Trade Cycle. By F. Lavington, Lecturer in the University of Cambridge. Pp. 113. London: P. S. King and Son, Ltd., 1922.

The Riddle of Unemployment and Its Solution. By Charles Edward Pell. Pp. 217. London: Cecil Palmer, 1922.

assayed against management, labor and outside contracts, for four manufacturing trades, and for the printing and building industries. The results of the assays for the six industries "justify the following statement: Over 50 per cent of the responsibility for these wastes can be placed at the door of management, and less than 25 per cent at the door of labor, while the amount chargeable to outside contacts is least of all." The study was made through the use of a questionnaire and field-report evaluations by engineers. There is a marked difference in the waste "scores" made by the different industries and by plants in the same industry. Against the men's clothing manufacturing industry were marked nearly 64 points out of a possible 100, while against the metal trades less than 29 points were scored. The chief sources or causes of waste in the individual industries throw interesting light on the possibilities of eliminating or minimizing maladjustments in industry, whether cyclical or otherwise.

In the men's ready-made clothing industry, in which it is said that "the outstanding fact . . . is that it is alive from top to bottom," the greatest amount of waste takes the form of seasonal shutdowns, at the root of which are the two factors of the failure of most shops to regularize employment by abandoning the sell-then-make policy, and the waste inherent in the manufacture of an unduly large number of models. To the tangible wastes are added industrial ill-will, which is characteristic of industries that are seasonal or in which irregular employment because of inefficient shop-planning is the rule. Furthermore, in the matter of outside contacts, where "cancellations of sales orders are commonplace, everyday occurrences . . . it is a common practice for manufacturers not only to oversell the dealers but to oversell their manufacturing capacities, make and deliver what they can and cancel the remainder of their orders."

In the boot and shoe industry, especially in recent years, and particularly in women's shoes, the factor of variety of styles has aggravated seasonal influences. Buying by retailers is concentrated in two seasons, and with styles changing rapidly, the retailer feels that he cannot afford to order far in ad-

vance. The results are obvious. Because of faulty control of production, "manufacturers estimate that the average shoemaker spends only 65 per cent of his possible productive hours in work; 35 per cent of his time is spent in idleness." Internal plant congestion as well as seasonal variations of output bring this about.

Contrasted with these two industries are the printing industry and the building industry, where work is in the form of jobs done strictly to order. Yet here, too, the great bulk of the blame for waste is put on the factor of management, altho in the printing industry labor, chiefly because its craft rules restrict flexibility of service, shares the blame to a considerable extent. Emphasis is strong on the large amount of saving possible from standardization of product, in job, book and periodical printing; and one may question whether outside contacts might not bear a greater share of the blame for the lack of standardization than is placed against them.

In the building industry, of course, the seasonal factor comes to mind at once and with it an abnormally large labor turnover. This industry also is a job industry, and differs from the printing industry in being neither of the factory type nor in general conducted in large-scale units. It is not surprising to find criticisms of the delays and wastes due to inefficient planning of jobs and purchasing, and failure so to route materials that the men on the jobs can be continuously and productively employed. Building-union rules have perhaps gone to the worst extremes in bringing about inflexibility and wasteful use of labor.

In the case of the metal trades, we have an industry turning out chiefly producers' goods, and the principal causes of waste are connceted with shop organization and high labor turnover. In this industry, which is charged with the least waste, we find the greatest percentage of the waste blamed on the management factor and the smallest charged to the labor factor. Finally, in the textile industry, outside contacts are given the greatest proportionate blame for such wastes as occur, and no details are given in the text as to the specific conditions in the industry.

This is an inadequate summary of some really interesting engineering studies which take virtually no account of the business cycle as such. No one, however, can approach the problem of the business cycle and its remedies without considering the weaknesses and wastes in industry that aggravate the other stresses and strains which accumulate during business booms. Indeed, one feels that if the authors of *Waste in Industry* had taken more definite cognizance of the business cycle, they would have placed a greater share of responsibility for wastes on outside contacts than they did.

In *Business Cycles and Unemployment*, on the other hand, — if there is any criticism to be made of this valuable book, — business "as is" is taken too much for granted, except in a few of the chapters, and cyclical phenomena tend to be treated as if they were superimposed on a structure which is inherently efficient except in its faculty of forecasting non-seasonal ups and downs.

The volume consists of a report and recommendations of a committee of the late President Harding's conference on unemployment, and an investigation made under the auspices of the National Bureau of Economic Research. The chapters which represent the investigation are divided into Part I, The Relation of Business Cycles to Unemployment; Part II, Cyclical Fluctuations in Unemployment; Part III, Proposed Remedies for Cyclical Unemployment. After emphasizing the need of business men for facts about their own industries and about industry in general, the Committee makes its recommendations for control of business cycles which, in the three fields of finance, production, and industrial relations, include (among other things) the control of credit expansion by banks and the possible control of inflation by the Federal Reserve System, control of private industries by individual business men, control of public and private construction at or near the peak of the business cycle, the increased construction of public works during depression, and the establishment of unemployment reserve funds and of a national system of employment bureaus.

Professor Wesley C. Mitchell opens Part I with a chapter on

business cycles, which is in the main a description of the cycle and of its phases and characteristic accompaniments — largely a *précis* of material in his well-known work on business cycles. Then comes a chapter by Dr. Frederick R. Macaulay, devoted to a brief summary, supported by the results of certain questionnaires and the price and production histories of a number of important commodities, of the diversity of experiences of individual industries in the last business cycle. It is significant to note differences amounting to as much as about two years between the dates of occurrences of peaks and troughs in various industries. Clearly, there is no single business cycle running concurrently for all industries. Yet there is sufficient concurrence to make it feasible to describe certain years as those of depression and others as years of prosperity; and the third chapter, by Professors Mitchell and W. I. King, is an endeavor to measure the economic losses caused by business cycles by approximating "the difference between the production of goods or income in years of depression and production in years of moderate and of intense activity." The authors come to the conclusion that there is a disparity of 15 or 20 per cent, or thereabouts, between the worst years and the best.

In the section on cyclical fluctuations in employment are two chapters which represent exceptionally interesting pieces of statistical work. These are Professor W. A. Berridge's chapter on "What the Present Statistics of Employment Show," and Professor King's chapter on "Changes in Employment in the Principal Industrial Fields, January 1, 1920, to March 31, 1922." Starting with the two facts that American "unemployment figures fail to tell us the number of the unemployed," and that there are no comprehensive figures of long standing on employment, Mr. Berridge proceeds to construct an index of employment that "will reflect changes in the *relative intensity* of unemployment between two points of time, without necessarily measuring the total volume of unemployment — or even the number of totally unemployed." His indices of industrial employment show remarkable correlations with adjusted indices of general production and pig-

iron production, and link up well with the forecasting curve of the Harvard Committee on Economic Research. Mr. King endeavors to determine the decrease in employment between the date of the 1920 Federal Census and March 31, 1922; in other words, to measure absolutely for that period what Mr. Berridge seeks to measure relatively. The results of the study indicate, among other things, a diminution of about one-sixth in the total volume of employment in this country, between the peak of 1920 and the trough of 1921. The figure corresponds remarkably well with the figure cited above of a 15 to 20 per cent difference between production in the best years of business cycles and the worst. Among other interesting facts adduced by Mr. King are that reduction of employment due to part-time work was confined mainly to a few fields, that the shift of workers from one industrial field to another was small, and that "small employers in general gave more steady employment than did large employers in the same industries."

Such are the statistical methods and tools brought to light in the first two parts of the book. Part III concerns itself with remedies for cyclical unemployment, and its keynote is stabilization. To the subject of finance is devoted one of the shortest chapters. Professor T. S. Adams notes some financial devices which have been suggested for controlling or mitigating the severity of business cycles, such as the adjusting of Federal Reserve discount rates, the raising of legal reserve requirements against Federal Reserve notes and deposits, the stabilization of the dollar, and others. Mr. Adams does not give his approval to any or all of these plans as solving the problem. Beginning with the assertion that "the distinctive evil of the business cycle is due to the abuse or misuse of credit," he ends with the statement that "the clearest duty of business man and banker is to assist in the development of more accurate cyclical statistics," since "to anticipate the cycle is to neutralize it."

In the field of production Mr. N. I. Stone indicates some of the significant results in regularization of production and employment that have been achieved by such concerns as the Dennison Manufacturing Co., the Hickey-Freeman Co. (Mr.

Stone's organization), the Joseph & Feiss Co., and others. The methods which these concerns have used include manufacturing to stock, inducing retailers to place orders well in advance of delivery and to accept deliveries well in advance of sales, increasing development of staple lines, education of the retailer and the consumer to use of the products, and a high degree of interdepartmental coördination and coöperation. Perhaps the most significant remark in the chapter is the statement that the chief value of these methods, "apart from the immediate gain of steady operation of the plant, is that they develop the habit and the capacity for planning ahead. This is what constitutes the bed-rock foundation on which rests the entire technique of eliminating or reducing cyclical fluctuations in individual business enterprises."

Mr. Sanford E. Thompson, in a chapter on "Methods of Stabilizing Production and Distribution," takes up similar questions from a more general point of view and with particular reference to the post-war cycle, emphasizing the importance of business statistics and knowledge of economic principles, and numerous factors which have frequently been dealt with in articles and textbooks in this field. Following a brief chapter on "The Problem of Cancellation," by Mr. Gilbert H. Montague, in which much of the blame for the cancellation evil is placed on harsh sales contracts on the one hand, and over-eager sellers on the other, comes a chapter on the stabilization of the building industries, by Mr. Ernest S. Bradford. That part of the chapter which is devoted to methods of stabilization consists almost entirely of extracts from, or abstracts of, statements by building interests, which relate rather to possibilities of stabilizing individual businesses than to stabilization of the industry as a whole, and relate to seasonal as well as to cyclical fluctuations.

Dr. J. H. Parmelee's chapter on the stabilizing of railway operations is concerned chiefly with statistics of railway activities in the three aspects of manufacture of transportation, employment of labor, and purchase of materials. Dr. Parmelee emphasizes the fact that not only have the railroads little opportunity to control the amount of their product, but they

have had far from sufficient opportunity, because of the situation of their finances, to plan and control construction programs and purchases of equipment over a long period of time. He concludes that "assuming the continuance of private operation of the railroads, only the establishment of a stable policy of public regulation will furnish the railways with a financial basis that will enable them to plan for the future, and thus to stabilize railway employment and railway purchases."

The final chapter in this field is that of Mr. Otto T. Mallery on "The Long-Range Planning of Public Works." The essence of this is the creation of a public-work reserve fund and the planning for years ahead of Federal, state, and municipal public works of all possible kinds. Mr. Mallery, whether because of or in spite of his own experience in governmental work, is inclined on the whole to be rather optimistic about the possibility of smoothing out the business cycle through the agency of well-timed public works.

There are four chapters in the field of industrial relations. The first, by Mr. Shelby M. Harrison, on the need of public employment offices, does not touch the question of business cycles. The second, by Dr. John B. Andrews, outlines the paucity and inadequacy of out-of-work benefits that have been provided by American trade unions. The third, by Professor Leo Wolman, on employment insurance, is concerned almost entirely with British experience before and after the war; and altho he does not feel that the experience of England proves that compulsory unemployment insurance is unworkable, he feels none too "sanguine over the probable effects of unemployment insurance, sound as it seems in principle. . . . Unemployment, likewise, will probably not be reduced substantially through insurance if it is cheaper to pay the insurance premium than to take the measures necessary to reduce unemployment." Miss Mary Van Kleeck pleads for more comprehensive and more prompt collection and distribution of statistics of employment, geographical and industrial, both by the Federal Government and by the states.

The last two chapters of the volume present some of the

possibilities of using statistics as a means of control of business conditions. Dr. Oswald W. Knauth points out some of the specific statistical information that is available and describes some of the statistical series and indices issued by such organizations as the Harvard Committee on Economic Research, Babson, Brookmire, Moody, and others. Mr. Knauth looks for progress in the building-up of our statistical equipment, but rather neglects the subject of progress in statistical technique; and it is of interest to note that at least two of the services whose statistical indices he describes have made substantial revisions of their indices since he wrote. Much can be done in perfecting statistical technique and thus interpreting more intelligently the vast amount of business statistics, internal and external, already at hand, even if no others become available for years to come. (It may be observed in passing that Mr. Knauth, in dealing with the work of the Harvard Committee, mentions only their index chart of money, business, and speculation, and says nothing about other work of the Committee, such as their indices of the volume of manufacture and of employment.) The final chapter in the book represents the results of questions sent out by a committee of the Federated American Engineering Societies as to the methods used by individual concerns to stabilize production and employment. One firm "cut employment to the quick and reduced payroll" as its contribution to stabilization, and another resorted to "curtailment of research in dull times." Such replies as this are pathetically humorous. The authors of this chapter conclude: "The investigation has revealed few indications of any organized or individual effort being made by American business enterprises to anticipate changes in business conditions. . . . The necessity for predicting and preparing for approaching changes in the major cycle and taking business advantage of them before the changes occur appears not yet to be recognized as a business principle."

The Stabilization of Business is a collection of chapters by nine authors. There is partial duplication of authorship (and of treatment) between this book and *Business Cycles and Unemployment*. The book adds little that is not in the volume

just mentioned or in other well-known works, altho, according to the preface, it "is an endeavor to make a useful contribution to the problem of control and stabilization" of business cycles. Professor Mitchell's chapter is confessedly a "synthesis" of "numerous articles and addresses." Then follows a chapter by Irving Fisher on "Stabilizing the Dollar," which takes up 15 per cent of the space in the volume and is, of course, a synthesis. Professor Dixon contributes a chapter on "Transportation and the Business Cycle," which, in the opinion of the reviewer, does not carry out well the distinction between the stabilizing of the railroads' own operations and the stabilization of industry in general through the working out of the roads' problems. The chapter seems inadequate on the subject of the financing problems of the railroads, and it seems to assume a flexibility in railroad management which unhappily does not always exist. Professor Commons's chapter on unemployment insurance, as one would expect, is one of the most interestingly written in the book. It is a plea for compulsory unemployment insurance as a means of stabilization; altho (to quote) "I do not say that unemployment insurance is alone enough to stabilize industry." Professor Edie himself has a chapter — the longest in the book — which is in good measure a synthesis of what others have said, there being, in 76 pages, 44 quotations of at least three lines and not over one page in length. On page 241, Mr. Edie says, in regard to "normal" production, "it is also important to note that the concept of normal implies what is normal for different stages of the business cycle." That is hardly what it implies to most statistical analysts and is certainly what it should not imply to one who would stabilize.

Professor Seligman's chapter, "International Problems in Business Stability," is concerned, as it says, "primarily with calling attention to the fundamental elements in the reëstablishment of the international economic equilibrium." It does not approach the problem of the maintenance of that equilibrium, and thus has an entirely different point of view from any other chapter in the book. Dr. J. B. Andrews contributes a brief discussion on the function of public works as an agency

of control, a subject in which he and the association of which he is secretary have been interested for many years. President Scott makes a plea for vocational guidance, education, and motivation in the field of human engineering toward more effective industrial processes. Finally, Henry Dennison retells the story that many of us have heard or read with so much interest, of "the applied technique of stabilization" in the Dennison organization.

Professor Hardy's book, *Risk and Risk-bearing*, whose title sounds like that of a volume on insurance, in fact deals specifically in some of its chapters with various types of insurance, but devotes two chapters to the business cycle as an important and typical form and cause of business risk and uncertainty. Four other chapters are concerned with investments and speculation in securities, and two more to speculation in commodities and the function of hedging. There is a more or less conventional description of the business cycle, and the conclusion is reached (p. 82) that "the cycle is not merely a phenomenon of finance" but one of a "rhythm of over- and underproduction in the case of many important industries." "Profit margins seem to result from, rather than to cause, the major changes in business activity." Yet, on the other hand (p. 98), "the most valuable single indices of business conditions are found in the rates of interest, . . . partly because of the abundance and accuracy of the data, partly because of the consistency with which changes in the money market precede changes in general business, and partly because the part played by money-market conditions in *causing* changes in prosperity is great enough to make it possible to make allowance for exceptional conditions," etc.

Whether or not these statements are mutually consistent, and whatever the relative weight that Professor Hardy gives in his own mind to production and financial factors, in each of the sentences quoted there is a definite implication (but no more) of that important element in the situation, demand, consumption, utility. Professor Hardy's treatment is lacking in an analysis or, as it seems to the reviewer, an adequate recognition of the cycles, trends, and vagaries of demand. This

goes to the extent of even omitting to take account of the demand of "shorts" and their advantageous position in a period of liquidation, when, the author says, "what occurs is a season of testing by which the stronger firms gain at the expense of the weaker" (p. 69). One who has written so well as does Mr. Hardy, in subsequent chapters, of the characteristics and functions of speculation might have been expected at such a point as this to call attention also to the gains of bears at the expense of bulls, and not merely of bears operating on or through exchanges. The subjects of foreign demand and of the influence of foreign trade on demand and supply and of the cyclical bearing of international comparative costs are similarly neglected.

Attention in passing may be called to the assertion on page 137, in a discussion of the commission brokerage house, that "its chief income is the commission it obtains for executing trades." The reviewer hopes that some day Mr. Hardy will have access to a broker's books, to see how much money is made in the interest account. There are no other statements in the excellent chapters on speculation that seem to be quite as "detached" as that.

It is difficult to do justice to Professor Jordan's *Business Forecasting* in a short space. The reviewer does not know many books of equal size packed with so many facts, figures, tables, and charts, that are so uncritical, so inadequate in analysis, characterized by so much slipshod comment and inaccurate generalization. As a serious contribution to the subject of business forecasting, it is of little value. The character of the book can best be brought out by some quotations:

> The farmers have a more inherent belief in the fundamental soundness of the country regardless of the sequence of good times and bad times, induced to no small extent by the inability to regulate production similarly as in the case of the industrial plants (p. 40).
>
> Alternate periods of prosperity and depression are money phenomena (p. 54); but (p. 52) Credit, i. e., commercial borrowing, never causes alternate periods of prosperity and depression.
>
> Agricultural productivity is the most important single factor which has influence over the trend of business conditions (p. 80). (Regardless of agricultural prices?)

Industry should keep pace with agriculture, with conditions abroad, and with the money market (p. 93).

Under normal conditions, commodity prices in general depend chiefly upon the prices of farm products which in turn depend upon the harvests (p. 116).

The change in the rate of dividends [of the United States Steel Corporation] parallels closely the trend in general business conditions (p. 156). (This is ludicrously untrue.)

Failures are usually most numerous in February because of insolvencies arising from year-end settlements (p. 161, note). (January is normally the month of the greatest number of failures.)

The operations of the Stock Exchange Clearing House, which started on April 26, 1920. . . . (p. 190). (Of course the Stock Clearing Corporation is meant.)

As long as the present policy of the reserve banks obtains, — that of using imports (of gold) to strengthen reserves, — a repetition of the war inflation of credit is impossible (p. 221).

Prices on the commodity exchanges reflect an even more scientific study of future probabilities than do those on the stock exchanges. . . . Any lack of balance is most quickly appreciated on these exchanges and finds almost immediate expression in current prices (p. 233). (Just how it happened that bond prices began tumbling early in 1919 and stock prices later in the same year, while cotton skyrocketed above 40 cents as late as June, 1920, is not explained.)

Professor Jordan, who has written a work on investments, says not one word about bond prices as forecasters. He thinks copper prices are made on an exchange (see pp. 173 and 235), and that lake copper prices are the significant ones. He says (p. 174) that "it will be noted that metal prices lag behind those of agricultural products" — on the basis of comparisons of pig-iron and copper prices with seven agricultural prices, which show nothing of the sort *as a generalization*.

In *The Trade Cycle*, Mr. Lavington has written a very readable analysis of what he might have called the psychology of the trade cycle. It is a brief work of barely 100 pages and, as the author is honest enough to say, is "not the result of original research, but is based mainly on the views of a comparatively small group of economists," including Messrs. Marshall, Pigou, D. H. Robertson, and W. C. Mitchell. The work is an almost entirely *a priori* treatment of the phenomena of the cycle, or, at any rate, a treatment unsupported by statis-

tics or other data. It is impossible in a short review to do the book justice, but the central argument can be summarized as follows:

The explanation of cyclical movements is to be found in modern specialized industrial organization. "The entrepreneur stands at the center of the economic organization, for under his control pass all the productive resources of the community. . . . If his forecast of future conditions is an optimistic one, the producing group which he controls is now active, and the market for the products of other groups is improved; if his forecast is pessimistic, this producing group is now inactive, and the market of other groups is depressed (p. 27). . . . Is it not probable, therefore (p. 28), that the key to the causes of business fluctuations lies in the mind of the entrepreneur, in the influences which determine his confidence in the business future? It is this line of investigation which will be followed in the subsequent discussion." This, however (p. 29), "does not explain the periodicity of activity and depression"; the explanation coming from the tendency of confidence to rise or fall *cumulatively*, reinforced by the interdependence of business firms and the influence arising from the changes in the volume of effective purchasing power which, through the raising or lowering of price levels, emphasizes conditions of confidence or depression.

The thesis of the book is therefore that business confidence, working through prices, plays an all-important rôle. The engineer in the cab of a locomotive certainly determines the speed of the engine by opening or closing the throttle and by releasing or jamming on the brakes. But underlying this statement are a dozen assumptions, such as the quality of his fuel, the quantity of water in the boiler, sufficiency of lubrication, the efficiency and coöperation of his fireman, and the character of his load on the one hand and of the equipment, roadbed, curves, and grades on the other. Mr. Lavington mentions and to a greater or less extent discusses, but stresses far too little, the complicated problems of raw materials, labor, capital and credit, which are in part inherent in and in part extrinsic to the movements we call the business or trade

cycle. True, the author closes a description of a cycle with the admission (p. 92) "that this summary is too simple and too dogmatic"; but he closes the book, writing in the autumn of 1921, with these words, which show that Mr. Lavington, like certain students of the subject in this country, has what in popular parlance might be called the stable-dollar complex in the matter of business cycles:

> There seems to be a good case for deliberately restraining the rise in prices during the period of growing trade activity which sooner or later must come. During that period some rise in prices is probably both desirable and unavoidable. But a limitation imposed on the extent of their rise, either by a further Treasury ruling removing a part of the potential expansion of note issue or a collective banking policy designed to limit the expansion of bank loans, could hardly fail to remove part of the artificial stimulus to business which results from rising prices, thereby checking the excessive growth of business confidence and limiting both the extravagance of the boom and the intensity of its following period of depression.

The Riddle of Employment and its Solution may be especially recommended to instructors in elementary economics who are searching about for interesting specimens of doctrine to insert in examination papers for students' criticism. Space permits the quotation of or reference to only a few of these. The nub of the argument is as follows. Falling prices cause a slump in trade, and not *vice versa* (see pp. 19, 216, 217). Prices fall because the credit "brake is jammed on hard (p. 60) when the economic wheel is whirling at full speed. The result is a sudden contraction of credit. Prices fall with disastrous swiftness. Everybody stops buying and endeavors to sell. . . . The whole disastrous sequence is traceable to the fact that our currency system makes no provision for the expansion of credit in proportion to the increase in the output of goods." Overproduction (p. 71) "means simply that credit is no longer being issued on a scale corresponding to the output of goods, with the result that prices fall." "Our credit and currency system" is not "sanely organized." "The simple rule (p. 109) is: When prices are rising, raise the bank rate; when prices are falling, lower the bank rate." (Gold may be dispensed

with in domestic trade.) "The policy sketched out in this work . . . will cost nothing to put into operation beyond the expenses of a few clerks and a competent statistician to calculate the index numbers; while the legal changes will be of the simplest. There is no risk whatever attending it and nothing but good can possibly come of it" (pp. 202, 203).

"It is probable," says the author in the opening sentence of the Appendix, "that criticisms of the views set forth in this work will consist mainly of assuming that they imply a regular inverse correlation between the bank-rate and prices and in pointing out exceptions to this general rule." In short, only mere economists are likely to quibble and split hairs on the solution offered to the riddle. But we wonder how sentences like the following sound to the Clyde, to Lancashire, and to British rubber interests:

> There is no reason why, given a healthily organized credit and currency system, a crisis or depression abroad should materially affect prosperity and the state of employment in this country (p. 144).
>
> We see that the prosperity of our foreign trade is dependent on the prosperity of our home trade, and not vice versa (p. 149).
>
> While there have been occasional local gluts of particular commodities, there has never been a time in the history of the world when any primary commodity has been produced in quantities exceeding the needs of the world (p. 75).

Economists must be satisfied with passages like this (pp. 152, 153):

> Even granting the adoption of an inconvertible paper currency and prices regulated to a given level by means of the bank-rate by all the leading commercial countries, gold will probably be still the best available standard of value for international purposes if it does not depreciate too much. . . . It will have nothing to do with fixing prices but will have its own index number, and its price will be regulated by supply and demand just like any other commodity. . . . A new par of exchange will have to be calculated between the various countries, but that is all.

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New York City.

NOTES AND MEMORANDA

ELASTICITY OF DEMAND AND THE COEFFICIENT OF CORRELATION

In his discussion of "Some Effects on Certain Agricultural Products of Uniform Increases in Freight Rates," in the issue of this Journal for August 1922, Mr. Roland Vaile makes use of the coefficient of correlation and of the coefficient of elasticity in a way that should not pass unchallenged.

He says (pp. 722–723): "The demand for any particular agricultural product is usually quite inelastic. This has been markedly the case with California oranges, for whenever the yield has been heavy the price has been low." To prove his point that the demand for oranges is inelastic, he correlates the percentage deviations of the yields "from an eight-year average, 1913–14 to 1920–21," with the corresponding deviations of orange prices from the average price, and obtains a coefficient of correlation of $-.91$. The high inverse correlation is taken by Mr. Vaile to be indicative of an inelastic demand.

Now there is no necessary connection between the coefficient of correlation and the elasticity of demand. The former measures the *intensity of relationship* between two variates, and *any* value for the correlation between quantity demanded and price paid is perfectly compatible with an elastic or inelastic demand.

The coefficient of elasticity is defined as the ratio of the relative change in the amount demanded to the relative change in price, when the changes are small; or, in mathematical symbols, as

$$\frac{dx}{x} \Big/ \frac{dy}{y} \quad (1)$$

where x stands for the quantity demanded, y for the price, and $y = \phi(x)$. It is, therefore, useless to talk of elasticity or inelasticity, unless one knows what $\phi(x)$ is, that is, unless one has the demand curve.

Let us assume that the law of demand of our commodity may, within the limits of observation, be represented by the straight line

$$Y = mX + b \quad (2)$$

where X stands, not for the actual quantity demanded, but for the ratio of the actual quantity demanded to the normal demand, and Y stands, not for the actual price, but for the ratio of the actual price to the normal price; "normal" demand and "normal" price being determined by approved statistical methods, and not by deviations from an "eight-year average." Then the coefficient of elasticity, e, when the demand is "normal," that is, at the point $X = 1$, $Y = 1$, is

$$\frac{dX}{dY} = 1 \Big/ \frac{dX}{dY} = \frac{1}{m} \quad (3)$$

or, the coefficient of elasticity varies inversely as the *slope* of the line of regression (our demand curve). If $\frac{1}{m} > 1$ (*i. e.*, if $m < 1$), the demand is elastic; if $\frac{1}{m} < 1$ (*i. e.*, if $m > 1$), the demand is inelastic.[1]

But the slope, m, is equal to $r\frac{\sigma_Y}{\sigma_X}$ where r is the coefficient of correlation between the quantity demanded and price, and σ_Y and σ_X are the standard deviations of prices and quantities, respectively. Hence (3) may be written as

$$e = 1/r\frac{\sigma_Y}{\sigma_X} \quad (3A)$$

It follows, therefore, that when r is in the neighborhood of 1, the demand will be elastic or inelastic (*i. e.*, $>$ or $<$ 1), ac-

1. See H. L. Moore, "Elasticity of Demand and Flexibility of Prices," in the Journal of the American Statistical Association, March 1922.

cording as $\sigma_X >$ or $< \sigma_Y$; that is, according as the quantity demanded is more or less variable than the price.

Mr. Vaile does not give the data upon which his computations are based, and it is therefore impossible to tell whether the demand for oranges is elastic or inelastic.[2]

Granting, however, that the demand for oranges is inelastic, as Mr. Vaile claims, and waiving all objections to his data and statistical methods, how can he justify the conclusion which he draws from the inelastic demand? He says (p. 723): "This behavior strongly suggests that any attempt to raise orange prices to cover the increased freight charges would lead the consumer to substitute locally grown apples or something else for oranges." That would be more true of an *elastic* demand!

Finally, one must suspect that the positive correlation which Mr. Vaile obtains between the yield and price of beans during the eight seasons from 1913–14 to 1920–22 is due either to wrong statistical procedure, such as failure properly to eliminate the secular trend, and to allow for any "lag" that may exist, or to the unrepresentative character of the data.

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Mr. Schultz raises two different questions. One of them is whether the coefficient of correlation between supply and price can be used as an index of elasticity of demand; the second is whether my conclusion regarding the elasticity of the demand is in accordance with the facts presented.

I accept absolutely the second criticism and I am confident the word "inelastic" as used at the top of page 723 of my paper is a typographical error, altho I do not have at hand the original manuscript. Certainly the discussion both preceding and following has to do with an elastic rather than an inelastic demand.

The point which I attempted to make was that, as the sup-

2. Assuming that the paucity of his data, and the abnormal period to which they relate, would still warrant trustworthy conclusions.

ply of oranges increased, the price fell off rapidly, and that it was impossible to increase the price during times of constant demand.

In reference to Mr. Schultz's first point, I feel that the facts presented in connection with the correlation coefficient are sufficient to justify the suggestion that "any attempt to raise the orange prices to cover the increased freight charges would lead the consumer to substitute locally grown apples, or something else, for oranges." The fact that the standard deviation of yields and the standard deviation of prices are so nearly equal and are both high, would mean that Mr. Schultz's coefficient of elasticity would be very nearly identical with my coefficient of correlation.

One measure of the elasticity of demand is its sensitiveness to changes in the price as a result of changes in quantity of the product. It appears to me that the correlation coefficient, together with the two standard deviations, is a satisfactory measure of elasticity in this case.

I can quite recognize the validity of Mr. Schultz's suggestion that an eight-year period is not sufficiently long to establish either normal demand or normal price. At the time that I wrote the article I did not have the figures for earlier years at hand; but I find that it makes no important difference what base line one takes nor how long a period out of the past twenty-five years one selects for this particular study. The reactions are essentially the same when one allows for the trend of increase in production of citrus fruits.

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A CONTRIBUTION TO THE STUDY OF COST CURVES

In the publications of the Bureau of Business Research of Northwestern University,[1] Professor Horace Secrist makes a noteworthy contribution to a subject which has been under discussion by several writers in the columns of this Journal: namely, the variations in costs at the hands of the several producers of a given article and the significance of these variations. The phenomenon of differential costs appears widely, almost universally; and this not only in the "extractive" industries, with which it was particularly associated by the older "classical" school, but in manufacturing and merchandizing industries as well. It is to the last-mentioned class — the merchandizing of goods — that Professor Secrist directs attention. He has had occasion to investigate the retail clothing trade, in the work done for the National Association of Retail Clothiers by the Bureau of Business Research of Northwestern University; and happily he has turned the results of his investigations to account on questions of economic theory. It is of good omen both for economics and for business that business associations find it worth while to secure for the consideration of their problems highly-trained economists, and that the data so gathered are utilized for the illustration and advancement of general economic analysis.

The retail clothing industry is in some respects particularly instructive for the problem of differential costs. It is completely and absolutely competitive. Further, it is carried on by all sorts and kinds of business units, big and little, scattered all over the country, in the greatest cities and in the smallest towns. Last, not least, the measurement of costs is particularly easy: it is simply a matter of the ratio of expenses to sales. Given the same accounting methods — and this much was assured as completely as could be anywhere pos-

1. Competition in the Retail Distribution of Clothing: A Study of Expense or "Supply" Curves. By Horace Secrist. Bureau of Business Research, Northwestern University, Chicago. Series II, No. 8. Price $1.

sible — and it can be inferred from the expense ratio whether a store is doing its business at high cost or at low cost. If one sells its goods at an expense of $20 for each $100 of goods sold, another for $19 per $100, the second clearly has the lower cost. And lower cost means not only higher business efficiency, but higher economic efficiency as well. As regards the type of persons employed and the wages bill, the same characteristics run through the industry so completely that lower expense in any series of stores cannot be ascribed to "exploitation" of the workers; it must be due to some other cause.

It is unnecessary to reproduce here the details of the results reached by Professor Secrist or to describe his statistical methods. The interested reader will turn for himself to the pages of the Bulletin. It is enough to say that the analysis has been carried out with the exactness and refinement of the best statistical practice, and that its technique is of high interest and value. The outstanding results for the economist, are, first, that the existence of the phenomenon of differing costs is amply confirmed; second, that a contribution to understanding it is made by following the cost figures of individual firms through a period of five years.

The cost curve, to repeat, is not consonant with the notion of constant (uniform) cost. In whatever way the figures are considered, it appears that some stores do work at small expense ratios; some at larger or moderate ratios; some at very high ones. Whether the figures are arranged according to the size of the stores or according to their location, the result is the same. It persists when all the stores taken together are considered; and when the figures for all are charted for five years, the lines for the several years being superimposed, the trend remains the same.

Moreover, the curve has not only a positive inclination, but the same shape, whichever way the figures are put together. In every analysis it appears that a few establishments have exceptionally low costs; a larger proportion have moderate costs, which, while not uniform, yet show no marked divergence from the mode; at the further end, there are again a few establishments with costs exceptionally high. The general

situation thus suggested is that there is (at the mode) a "representative firm," from whose costs and efficiency most of the businesses do not greatly diverge. A few units have very low costs, that is, very high efficiency. A few at the other extreme have costs so high that they may be regarded as in course of disappearing; they belong to the flotsam and jetsam of economic life, and are no part of its normal or continuing structure, — negligible for most purposes of economic theory.

Next, as regards the cost figures of the individual firms, the results are still more instructive. On the whole, they confirm the view that an individual firm whose cost is low in one year remains in that position throughout; they suggest the explanation on the ground of differences in managing ability.

The investigation of the positions of the individual firms disclosed two tendencies: one, for a firm whose cost differed from the average, to revert to that average; the other, for it to retain permanently (that is for the whole five-year period) its exceptional position. Evidently if the first tendency were the stronger — if a firm whose costs were low in one year showed higher costs in the second year and again higher in the third or fourth — the inference would be that the deviations were due to irregular and accidental causes. They would be evened out in course of time, and over a considerable period would disappear. Over a five-year period they would almost certainly be very much evened out. If, however, the second tendency is the stronger, the inference must be different. If a firm whose costs are low in one year, notwithstanding a partial reversion toward the average or mode, still shows a distinctly lower cost throughout, it follows that some permanent factor predominates and causes it to retain its advantageous position.

It is this sort of situation — a minor tendency to revert to the average, but a stronger and predominant tendency to persist in a divergent position — which Professor Secrist finds. Stated in statistical language, "the positions of stores on expense curves in a given year are positively correlated with their positions in subsequent years." The accidents and irregularities of business enterprise account in part for the position

of a firm in the cost schedule; but none the less there is a cause at work which keeps it steadily in a given sector, and more particularly keeps the low-cost firms steadily in the low-cost region. Presumably the cause at work is a difference in managing ability. The general result then is to point to the existence — in a certain range of business operations — of a representative firm and of a normal price-determining cost; and also of a set of firms with costs below the normal and with a differential gain analogous to economic rent.

A word or two of caution may be added. The cost curves are constructed on the basis of number of firms, not on that of quantity of output (sales). In laying them out, each firm counted as one, irrespective whether it did a large or a small business. The slope of the curves would presumably be different if they were constructed as supply curves. It is by no means certain, however, that the difference would be considerable; on the contrary, the indications are, as Professor Secrist informs me, that it would be slight. It should be said also that no attempt is made to compare cost with price. The price of retail service would be indicated by the "spread" per $100 of goods between wholesale and retail price; just as cost is the "expense" per $100 of goods. There would be no small interest in a comparison of expense with spread; that is, of cost with price.

Not long ago, in the Economic Journal, there was an interesting discussion between Professors Clapham and Pigou on "empty economic boxes." [2] I confess to being struck by the former's contention that too many of our concepts and propositions are *in vacuo* and that we are but ill informed about the way in which the facts of economic life fit into them. But the rapid accumulation of statistical data and their analysis by the best statistical methods are putting more and more into our empty boxes; and I am convinced that this is one of the most promising steps for the advancement of economic science. Such a step Professor Secrist has taken.

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2. See the Economic Journal for September and December 1922.

BANK LOSSES; AN ILLUSTRATIVE CASE

[The note here printed, while not signed by its writer, reaches us from a source which is above suspicion. The figures will be of interest to students of money and banking. — THE EDITORS.]

Because bank losses are never published, a short tabulation of the losses experienced by even one bank may be of some interest. The bank referred to in this note shows seven million dollars assets and a daily turnover of about half a million dollars. It is situated in the outlying district of Chicago. The traditional secrecy of the banking profession prevents disclosure of the name.

To begin with, our heaviest loss, uncollectible loans, amounted to approximately seventeen thousand dollars during the period from April 1, 1921 to September, 1923. As commercial loans averaged three million dollars, this loss may be placed at one half of one per cent of the loans.

Somewhat akin to bad notes are overdrafts written off. Loss on that account for the twenty-two months from December 1, 1921 to September 1, 1923, totaled five hundred seventy dollars. This sum is a minute percentage of the checking account average — one million eight hundred thousand dollars.

During the same period checks cashed by us, sent to other banks but returned to us unpaid and marked "not sufficient funds," "payment stopped," or "account closed," which we could not collect from endorsers, amounted in all to five hundred twenty-five dollars.

More costly than the occasional slips of the careless customer are the "No Account" checks of the bank criminals. They are so successful in tiding over a lean month or a period of seasonal police activity, that thousands of their worthless checks are launched every year. Usually some hotel or department store is the loser; not always, however, as witnessed by our one-thousand-and-eight-dollar loss. One hundred dollars was retrieved by expensive detective action.

This method of raising money is so easily employed that the counterfeiters' art is passing. We have encountered no counterfeits recently, altho we lost sixty-two dollars on account of cleverly raised bills. The most insidious of all bank crooks, the forger, was paid twenty-nine hundred sixty-nine dollars by this bank during the twenty-two-months period. Of this total, costly detective service and insurance retrieved eight hundred twenty-six dollars. The forgeries numbered twenty-four. The amount chosen is either twenty-five or seventy-five dollars.

The following figures summarize the losses from all sources, and show their relation to the other operations of the bank.

Overdrafts	$570		
Checks returned to us (N. S. F.; Act. Closed; Stop Pay.)	525		
Forged signature and endorsement	2143		
Checks returned "No Account"	907		
Checks lost by clerks	12		
Currency raised	62		
Bonds stolen by employees	1250		
Difference Account loss	2200		
Total loss — except bad loans	$7,670	(x)	$7,670
Loans written off		(y)	17,000
Expense necessitated by special protection for 22 months.			
Armed guards for currency shipments	$4,410		
Insurance against forgery	1,000		
Insurance against embezzlement, robbery	5,794		
Insurance against mail theft	100		
Donations to police	250		
Total extraordinary expense	$11,554	(z)	$11,554

Gross income during 22-month period.....$490,676

Total loss (x) represents 1.56 per cent of gross income.

Loans written off (y) is 3.47 per cent of gross income.

Total extraordinary expense (z) is 2.35 per cent of gross income.

Grand total of losses, (x) + (y) + (z) = 7.38 per cent of gross income $36,224

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